MONTANA OUTDOORS

JULY/AUGUST 1976
SIXTY CENTS

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To commemorate the nation's bicentennial, we have chosen Joe Thornbrugh's painting of the American bald eagle as the front cover. In addition to being the national symbol of the U.S.A., the bald eagle was first sighted by the Lewis and Clark Expedition in Montana on April 27, 1805, near Fort Union. Other wildlife sightings and details of the adventure are related in Ken Walcheck's article, beginning on page 15. Faced with disappearing wildlife habitat, resource shortages, an energy crisis and proliferating litter, it seems appropriate to begin reusing beverage containers. But the concept requires a fundamental change in American life styles, as Bill Schneider points out in his article on page 39. The back cover photo by Paul Dix (reflejo)—taken in Park County, Montana, in the West Boulder River Valley—underscores the benefits of unlittered, undegraded landscapes.

ASHTON'S BUTTE

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a unique natural treasure

a livable environment for WILDLIFE is a quality environment for MAN

The last remaining stretch of unaltered, undammed and free-flowing Missouri—the 175-mile segment in Montana between Fort Benton and the headwaters of Fort Peck Reservoir—has a recent history marked by controversy and indecision. In earlier times, the river provided an important route for explorers and commerce. Today, steamboats, trappers and Indians have given way to urban pleasure seekers and recreationists. The urge to conquer and claim has been replaced by a firm resolve to protect and restore.

In 1965, the Montana Fish and Game Commission established the Montana Recreational Waterways System. Under provisions of the system, the commission could designate selected rivers as "Recreational Rivers," but this designation carried no guarantee against exploitation or development. The commission designated the Fort Benton to Fort Peck Reservoir segment of the Missouri as a component of the Montana Recreational Waterways System in 1966.

In 1968, the Bureau of Outdoor Recreation issued a report which recommended establishment of a "Missouri Breaks National River." Also in 1968, the Congress, recognizing the need to preserve a part of America's heritage, signed into law the Wild and Scenic Rivers Act. Although Montana's 175-mile Missouri segment was not one of the act's "instant rivers," it was included as a study river.

In 1971, Sen. Lee Metcalf (D-Mont.) introduced legislation (S.1405) to classify the Fort Benton-Fred Robinson Bridge segment of the Missouri as a Wild and Scenic River. Hearings were conducted in several Montana communities, pro and con testimony, and letters and newspaper articles followed, but the bill failed to pass. During the 93rd Congress, Sen. Metcalf tried again by reintroducing the legislation, this time in the form of S.1009. And again, the bill failed in committee.

All this time, the river has continued to provide pleasure and recreation, but its future remains clouded by rumors of pending disaster due to the energy crisis, the need for power generation and water and even a grandiose scheme to dredge the river for barge traffic.

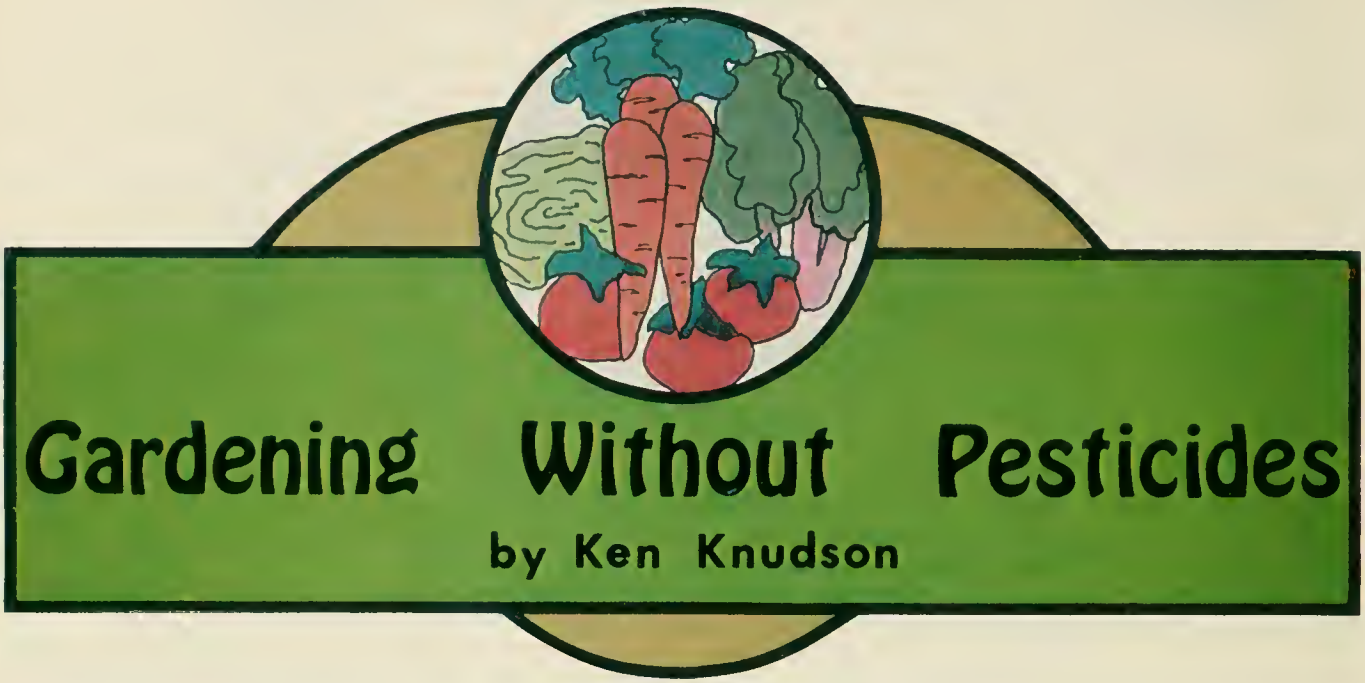
With the patience of Job and a sincere commitment to preservation of the last remaining stretch of "Wild Missouri," Sen. Metcalf again reintroduced the legislation in the 94th Congress as S.1506. His most recent effort would classify the river under provisions of the Wild and Scenic Rivers Act into various categories—wild, scenic or recreational. And the bill would prevent certain types of development such as dams, while at the same time protecting existing uses such as grazing, water removal, bridge construction, etc.

As these words are put down, that legislation has passed the Senate, but sits stalemated in the National Parks and Recreation Subcommittee of the House Interior Committee where once again, Montana's Missouri depends on the graciousness of our elected representatives.

So, attempts to preserve the Missouri are really nothing new, having spanned at least the last 20 years. Sen. Metcalf's latest effort and his patience on behalf of the river again deserve gratitude. Hopefully, his effort won't be in vain, for the river's unique values and pristine beauty deserve whatever we can all do to guarantee a future unmarred by a variety of threats. Wild and Scenic River status would provide for this future and we could all be proud in future years that we had the foresight to set aside one of the nation's truly unique natural treasures.

Wes Woodgerd

Wes Woodgerd, Director
Department of Fish and Game



Gardening Without Pesticides

by Ken Knudson

The home gardening boom is here.

More people are discovering—or rediscovering—that an enormous amount of pleasure can be derived in growing something from seed to harvest. And nearly everyone knows home-grown vegetables and fruit taste far superior to those bought at the grocery store. Add the rising cost of food products and you can understand why more and more people are gardening.

Besides proper sunlight, soil type, watering schedules and weeds, insect pests will be the largest problem confronting the average gardener this summer. How can these pests be controlled without using pesticides, which are unquestionably harmful to all living things, including you, the applicator? What are some sane, rational alternatives to pesticides that will still result in wormless cabbage, healthy potatoes or unmunched-on tomatoes?

We all want healthy, productive gardens. But with the dramatic increase of home gardens and the subsequent, potential increase in pesticide users, the health of good old Mother Earth is influenced by more (and often less experienced) people. What you do to that little backyard plot may not seem like it would have much effect on the total biology of the world. But when you consider that tens of millions of home gardens exist in the U.S. alone, it adds up fast, much like the roadside litter problem or "the straw that broke the camel's back"—the small actions add up to a significant impact.

Nor should we feel that home gardening is a small contributor to the total pesticide picture. Of the nearly one *billion* pounds of pesticides applied in the U.S. in one year (1970), 51% was for farm use and the remaining nearly *half a billion pounds* was used for public spray programs and around the home and garden. Home gardeners should eliminate this needless usage by emphasizing natural, nonpoisonous pest control, not only for the safety and health of those alive today, but also for the sake of upcoming generations. Also, some pesticides have an adverse impact on wild animals and their habitat.

AN OVER-ADVERTISED NIGHTMARE

Have you heard or read a catchy jingle promoting use of pesticides in the home garden? The pests are "blown away" with one blast from a spay can, accompanied by cheers of relief from the plants. All appears rosy. However, these advertisements speak very lightly, if at all, of the *dangers* pesticides pose to humans and all living things.

Let's face it. Pesticides are synthetic *poisons*. Many (the so-called organophosphates like malathion, parathion, phosdrin, dursban and TEPP)

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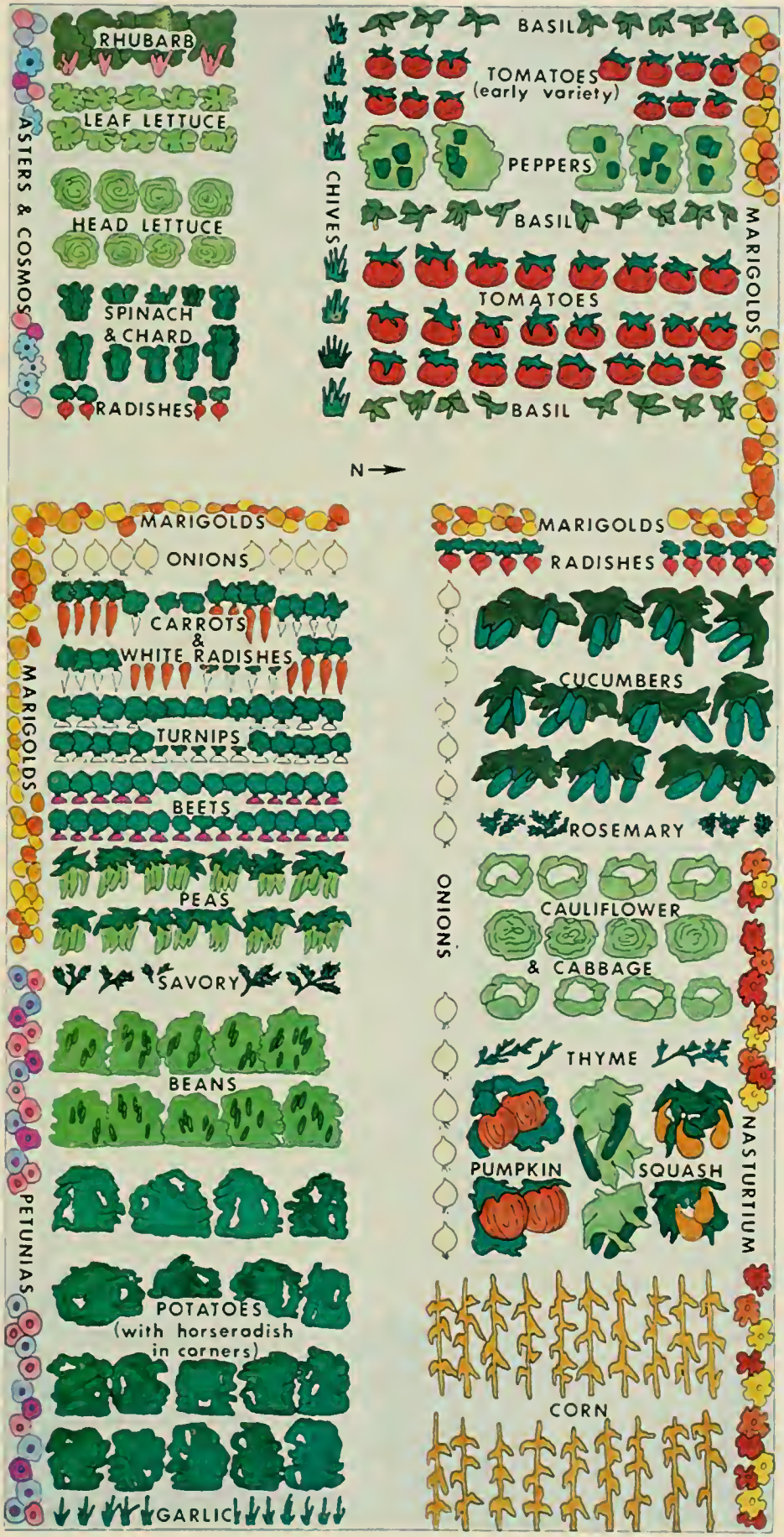


A possible garden arrangement utilizing companion planting on a 20' by 40' plot. illustration by Donita Sexton

were originally developed as extremely destructive gas warfare agents, and many (the so-called chlorinated hydrocarbons like DDT, chlordane, endrin, dieldrin and toxaphene) may persist at poisonous levels within the food chains of animals for 20 years or longer. If you add to these clearly evident drawbacks the nonselective action of pesticides (whereby all living things, *not* just the "target" pests may be poisoned), you should have some convincing reasons for not using pesticides in your garden.

Of the 800,000 species of insects which inhabit the earth, under 3,000 harm humans or crops. Therefore, when pesticides are applied, a 99% chance exists that the applicator may ultimately affect a beneficial bug or, at the very least, some other form of life—birds, fishes, mammals or humans. As Rachel Carson, author of "The Silent Spring," one of the first books to chronicle pesticide dangers, so eloquently said, "To turn against life in all its variety a barrage of long-lasting, nonspecific poisons [pesticides] is as barbaric as putting a torch to the flourishing village that conceals a fugitive guerrilla." And many more examples of the dangers of pesticides could be cited—the accidental poisoning of children from mislaid spray cans, the virtual sterility of soil in California's Napa Valley from the over-application of pesticides and the decline of our national symbol, the bald eagle, and other birds of prey through accumulation of pesticides in animal food chains.

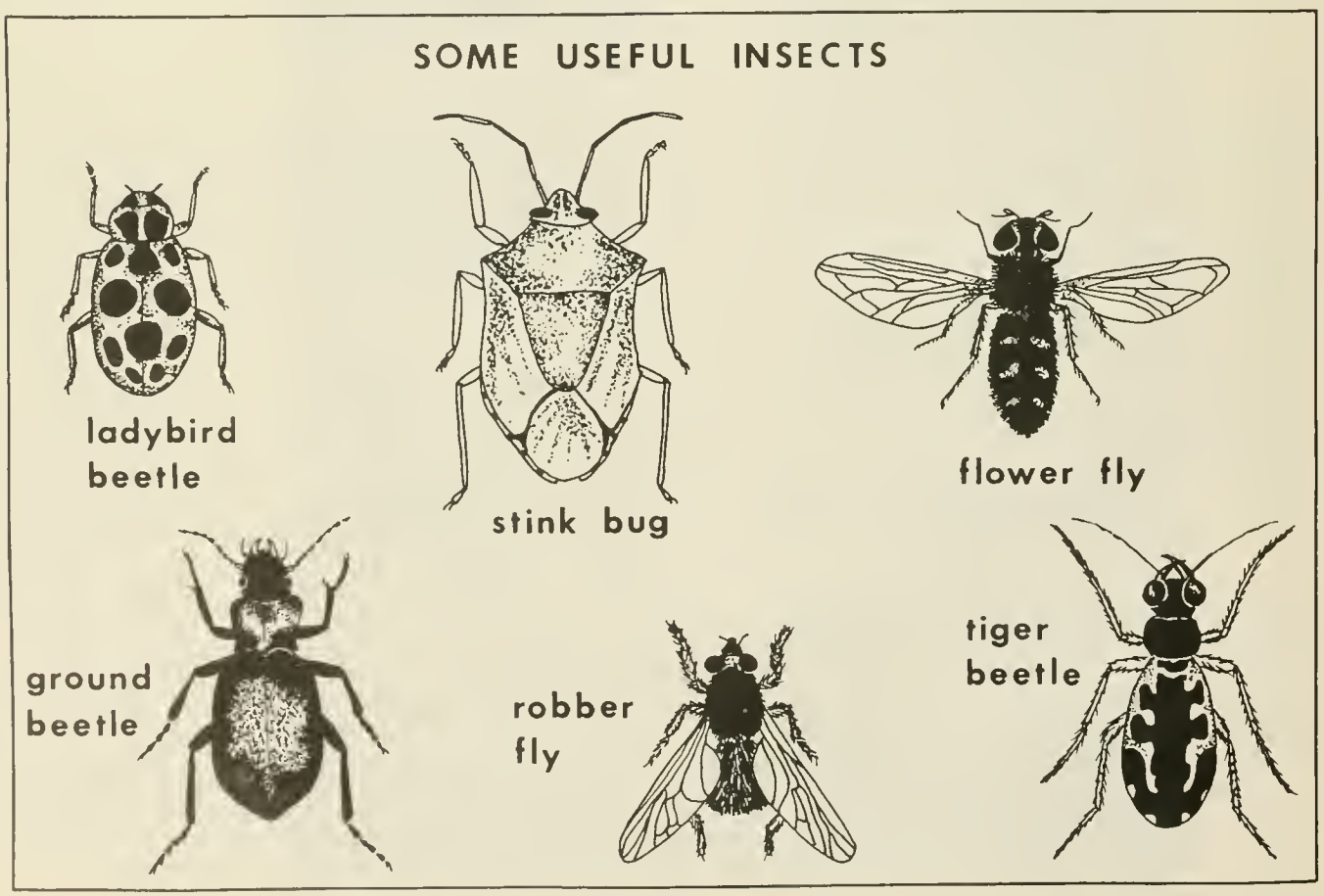
It's a sad fact that Americans seem to be sold on the idea that pesticides are necessary for gardens to survive. However, some new (but somehow old and sensible) advice is—"Don't buy it if you don't need it," and there is *no* reason to buy synthetic pesticides. Natural controls work perfectly well in a small area like a home garden. The few small scabs and scales that *may* end up on your vegetables are a small price to pay for a healthier backyard and a healthier world.

BENEFICIAL INSECTS

All insects have a tremendous reproductive potential. For example, it has been estimated that if descendants of one pair of houseflies were allowed to grow and reproduce unchecked, within 10 years the resulting flies would weigh more than the earth. Fortunately, no species of insect or any other animal (except man?) is able to grow and reproduce without interference from its natural enemies. This check and balance interrelationship of all living things is the fundamental principle of biological control.

Even the smallest garden provides a potential home for thousands of insects and other animals. Remember, very few are likely to be harmful. If enough predacious insects (those that feed on other insects) are present, they will do an excellent job of controlling the plant-eating or harmful varieties, therefore swinging the balance in favor of the gardener.

Don't panic just because you see a few bugs in your garden. Instead, learn to recognize those that



are on your side. A few examples of beneficial insects are the familiar orange and black ladybird beetles (ladybugs) which thrive on aphids, and the infamous stink bugs which literally suck dry hundreds of harmful worms and caterpillars. The large (up to an inch long) black ground beetles and the iridescent blue-green tiger beetles, both recognizable by their prominent jaws, feed on cankerworms, cabbageworms and other caterpillars. Robber flies, which attack nearly every kind of insect, including grasshoppers, look very similar to bumblebees with a hollow space between the eyes. Flower flies are brightly colored and look like bees; both the adults and larvae (immature stages) feed on aphids and scale insects. Other beneficial insects include bees, certain wasps, assassin bugs, ambush bugs and of course, the famous praying mantis. Although the mantis is not native to Montana, egg cases which could be hatched in your garden are available from: Mincemoyer's Nursery, R.D. 5, P.O. Box 379, New Prospect Road; Jackson, NJ 08527.

Ladybugs can often be collected in fields with a small insect net or with a piece of cloth attached to a wire frame. Remember to take only what you need for your garden. They're needed in the wild, too. If you're interested, they can be purchased from: Bio-Control Co., Route 2, P.O. Box 2397; Auburn, CA 95603. Both mantis egg cases and ladybugs are available elsewhere as well.

It would be difficult to list all beneficial insects in such a short space. For those who wish to pursue this topic further, a reading list is provided with this article. Remember, however, that the beneficial insects are higher on the food chain; they feed on insects that, in turn, feed on plants. When plants are sprayed, insect pests may retain the poisons without being killed themselves. The pesticide then accumulates in their bodies where it is available in a more concentrated level to predacious insects. Indiscriminate application of pesticides will nearly always harm a higher percentage of beneficial predators than the harmful plant-eaters.

BENEFICIAL PLANTS

For centuries, naturalists, farmers and casual gardeners have noticed that certain insects are often attracted to certain plant species while other plants seem to repel these insect pests. In recent years, scientists have tried to isolate the chemicals within plants which produce this attraction or avoidance response. Benefits of this research are obvious: The isolated compounds could be manufactured and sprayed near crops to either chase away, or attract to traps, any desired pest.

However, progress has been slow, perhaps due to the enormous amounts of money spent trying to achieve "better" and "more effective" pesticides. Such bio-sprays or bio-attractants, including certain insect hormones isolated as species-specific attractants, are not yet readily available to the home gardener. Hopefully, more research will be directed toward development of species-specific attractants and repellents which could be safely applied to gardens without endangering beneficial animals.

But until these more sophisticated techniques are developed, the gardener can depend on some old tried-and-true champions for controlling insect pests—certain strong-smelling herbs and ornamental plants. "Strong smelling" certainly doesn't mean their aroma is disagreeable to humans. Rather, it's noticeable to every animal with an ability to detect odors. The aroma of such plants is indeed detected by most garden pests. In fact, most unwanted pests are seemingly overwhelmed by the smell, causing them to seek other areas where they can comfortably satisfy their appetites.

The following list summarizes such beneficial plants. The list is certainly not the last word in beneficial plants, but it includes most of the old standbys.

Insect-Repelling Herbs and Ornamentals

basil or borage
Plant near tomatoes; deter nearly all pests as well as improving the flavor of tomatoes. Pot and plant near porches or entrances to your home to deter flies and mosquitoes.

horseradish
Plant at corners of potato patch to deter potato bugs.

savory
Protects all kinds of beans.

sage, mint or thyme
Deter cabbageworms; also protect related plants like cauliflower and Brussels sprouts.

garlic
Deters Japanese beetles, aphids and other insects that attack fruit trees and raspberries.

onions or leeks
Deter many insects, as well as moles and mice; therefore, also valuable in the orchard.

marigolds or pyrethrums (the painted daisy)
The workhorses of pest deterrents. Plant around or throughout the garden to deter most insects and nematodes. To save space, use dwarf varieties.

asters, dahlias or geraniums
Deter most insects. Geraniums, of course, must be wintered indoors.

nasturtium
Deters aphids, squash bugs and striped pumpkin beetles.

tansy
Repels ants, mosquitoes and most beetles. Particularly good around raspberries and grape vines.

radish
Especially deters cucumber beetle. To in turn protect the radishes from worms, plant marigolds near them.

petunia
Protects beans.

rosemary
Protects beans from beetles and cabbage from "worms." Can be potted and taken inside for winter.

continued

THE HEALTHY GARDEN COMMUNITY

Advantages of a mixed herb-ornamental-vegetable garden are many. Periodically harvest the herbs to add delicious flavor to other foods. Take care, however, not to harvest all of them. Their debris should be mixed into the soil where it can accumulate into a long-lasting pest deterrent. Ornamentals will not only add color to your garden, but also attract beneficial animals—birds, toads, pollinating bees, dragonflies and other predacious insects which are largely unaffected by the plants' aroma. (After all, their senses are mainly keyed to other insects, not to the plants, for their meals.)

By planting a few bushes like chokecherry, honeysuckle, hawthorn, dogwood or mulberry around your garden, the chance of attracting birds or reptiles is substantially increased. Birds may eat a few berries, but this is a small salary for their other work. For example, a single chickadee has been reported to destroy over 138,000 cankerworm eggs in one season. Birds are also often the first line of defense against always troublesome grasshoppers.

An area which contains many kinds of plants and animals, none dominating, is healthy and likely to thrive—another extension of "the check and balance" concept. Without thinking, gardeners often violate this rule by planting row after row of a single vegetable type. This arrangement increases the chance of attracting pests which key on this particular plant species. Once the pests are established, they will obviously be free to spread from plant to plant. You don't need a garden with a hundred species of plants scattered about, but some prior planning increases the diversity and health of your garden. Consider planting the beneficial insect-deterring plants near your vegetables (companion planting) and get away from the single patch concept. (See illustration for a possible garden arrangement utilizing companion planting.)

NATURAL SPRAYS

Even a carefully planned garden may be susceptible to an occasional insect orgy. What then? Fortunately, some safe concoctions can be made from common, household materials and they can be applied to your garden with little fear of harming the beneficial animals.

Green octagon soap (a natural soap containing a sodium base without phosphates), available from drugstores, when mixed with garlic, causes most caterpillars to die on the bush or fall to the ground where they are easy prey for birds or other predators. Simply dissolve half a cake of soap and two mashed garlic bulbs (not cloves) in one gallon of water. Two successive daily sprayings will clear the plant of pests.

For a potent aphid spray, cut up about three pounds of rhubarb leaves, boil for half an hour in a gallon of water and drain. Add a few tablespoons of Ivory Snow to the cooled rhubarb solution. Spray liberally to the infested plants.

The nicotine in tobacco is very poisonous, even to insect pests. Steep a pound of tobacco for a few days in four gallons of water. Use this potent weapon against thrips, leafhoppers, aphids or nearly any other insect, including some of the beneficial bugs, so spray with care.

Solutions of light grade oil (mixed with fish soap) are available from most garden suppliers. Action of these sprays is very similar to the soap/garlic mixture.

Boil leaves and flowers of the beneficial herbs or ornamentals, such as marigolds or nasturtiums, in water for a few minutes. The resulting solution will be as effective as the living plants, with the added benefit of a concentrated solution.

If you have a slug problem, try putting a bit of last night's stale beer in a shallow pan. Snails and slugs will go for it like Andy Capp, but for them, it will be the last drink they ever take.

At times, however, we may look too hard for solutions to relatively simple problems. It's amazing how a good blast of water from the garden hose will often discourage pests.

NO PESTICIDES IN THE GARDEN

The key to applying natural controls in your garden is patience. Those herbs may not sprout up immediately. When they do, they will require as much care and attention as your other garden plants. Marigolds or garlic may take awhile to establish themselves and in the meantime some bugs may violate their repelling barrier. Similarly, it may take awhile for predacious insects to build up or for birds to frequent your garden.

But hold tight. It *works*, as thousands of serious gardeners who use biological controls will testify. It's far too easy to give in and return to the pesticide habit. Unfortunately, supplying yourself with pesticides capable of killing everything in the garden 10 times over is easy. Avoid the easy, quick solution, since it seldom, if ever, is a lasting solution.

By striving for natural variation of all life in your garden, you will not only be rewarded with a healthy, productive area, but you will also be doing your share in making the world safer for all living things.

SUGGESTED READING

"Ecological Effects of Pesticides on Non-Target Species," David Pimentel (Ed.), special publication of the Executive Office of the President, Office of Science and Technology. For sale from the Supt. of Documents, U.S. Govt. Printing Office; Washington, D.C. 20402 (document no. 4106-0029).

"Getting the Bugs Out of Organic Gardening," by Barbara McKillip, Rodale Press Inc.; Emmaus, PA 18049.

"Handbook of Biological Control of Plant Pests," Peter Nelson (Ed.), special printing of "Plants and Gardens," Vol. 16, No.3, published by the Brooklyn Botanic Garden; Brooklyn, NY 11225.

"Organic Gardening for Health and Nutrition," Book Sales Inc., 111 Enterprise Ave.; Secaucus, NJ 07094.

"Since Silent Spring," by Frank Graham, Jr., Fawcett World Library, 67 West 44th St.; New York, NY 10036.

"The Free Earth Guide to Gardening," by Jack Kramer, Walker and Co., 720 Fifth Avenue; New York, NY 10019.

"The Gardeners Catalogue," William and Morrow Co., Inc., 105 Madison Ave.; New York, NY 10016.

THE CATCHALL

Sportsmen and the Meter

"Did I ever tell you about that 90-kilogram white-tailed buck I shot at 273 meters with my 7.62 by 51R?" That's how those "big buck" yarns are going to sound in the near future after we adapt to the metric system of weights and measures.

The experts tell us this country should complete its conversion to the metric system in 10 years or less. That means the sportsman will have to bone up on the new system so when he's swapping hunting or fishing tales, he'll have to be reasonably sure he's not mixing up his kilograms with his kilometers or his millimeters with his milliliters.

Picture Joe Mallard, for example, on a typical waterfowl hunt. Our wildfowler gets up at 5 a.m. and checks his thermometer which reads -8° C. After gulping down a cup of hot coffee, Mallard loads his hunting gear, including a 36-kilogram black lab and a four-meter duck skiff into his foreign four-wheel drive, "Metrica."

Mallard drives 30 kilometers to his favorite 400-hectare marsh which is 878 meters above sea level. After breaking a patch of five-millimeter ice, Mallard throws out a couple dozen decoys, loads his over-under shotgun with 7.62 centimeter magnums loaded with 46.07 grams of number four shot and pours himself a cup of coffee from his liter thermos.

As the sun breaks over the horizon, a flock of geese wheels out of the east and swings toward the decoys. Mallard honks on his call and a dozen honkers slam on their aerial brakes and start to dip Joe's way. When the geese are about 20 meters away, our wildfowler cuts loose and drops two honkers, the largest weighing about six kilograms.

Had enough? If not, let's look at Tom Grayling as he checks his fishing equipment in preparation for a float trip on the upper reaches of the Yellowstone River.

Grayling notes that his 3-meter, 56-gram ultralight fly rod has a frayed wrapping which needs repairing. Our fly caster plans on using 27-meter, double tapered fly line with a .25-kilogram tippet and hopes to catch a 50-centimeter trout that weighs at least 2.5 kilograms.

He also plans on floating the Yellowstone in a four-man, 50.5-x 26-centimeter inflatable raft that has a weight capacity of 800 kilograms. And of course, Grayling will want to photograph the highlights of the trip with his 35-millimeter camera equipment with a zoom 80-200 millimeter lens.

Sound confusing? Ready to throw in the towel? Well, the system isn't really that difficult to understand and it's much more practical in this world of changing technology.

Like it or not, the metric system will be in use sooner than you think and if you plan to continue swapping hunting and fishing stories, get set for some big tales. With the conversion and retelling, who knows how our Montana state fishing records might grow?—*Ken Walcheck*

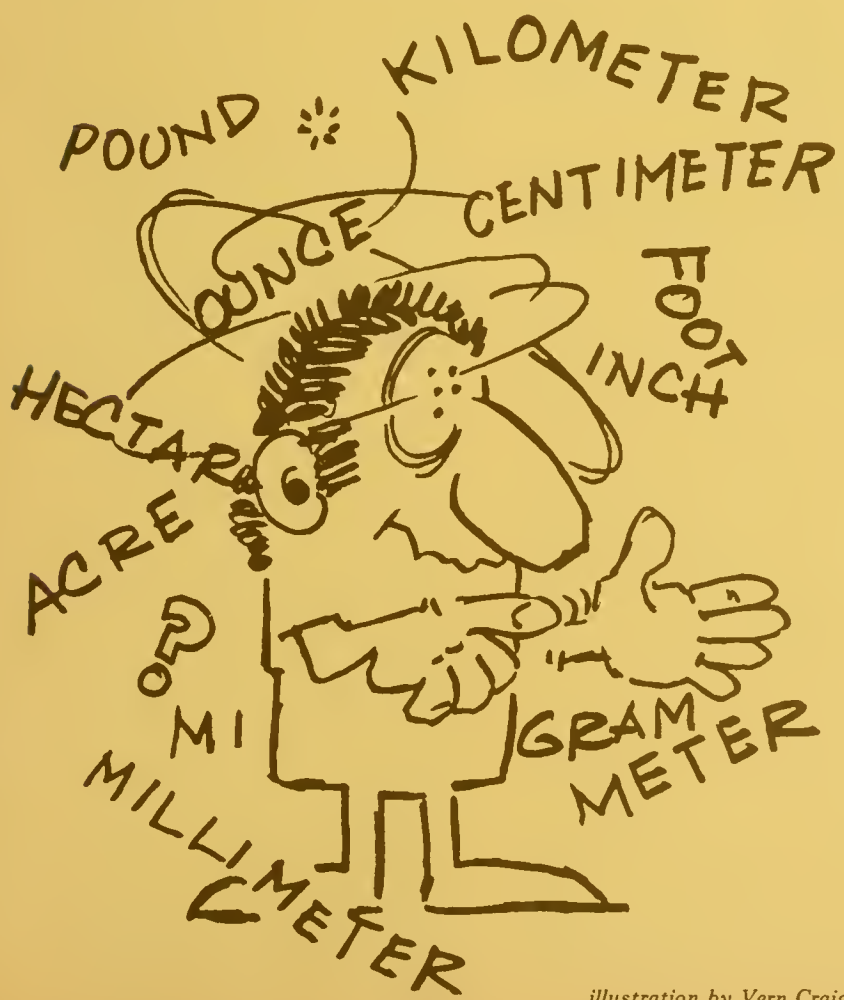


illustration by Vern Craig

LEWISTOWN CLUB INITIATES PROGRAM

If you tune in to KXLO Radio in Lewistown at about 11:45 on a Tuesday morning, you'll hear some pretty solid information about wildlife and outdoor recreation.

The five-minute weekly program was initiated by the Lewistown Rod and Gun Club in March and it marks the first effort of its kind in the state. Club member Craig Flentie does the announcing, interviewing and taping. He and several other members of the club felt that many aspects of the outdoor scene weren't covered in much depth by the media, so they decided to do something about it.

continued

recycled paper

They engaged the financial support of five local businesses—Fleet Wholesale Supply, Von Lindern's Spring Creek Trout Hatchery, Greenacres Mobile Home Park, Hartford Sanitary Disposal Service and The Sports Center—to underwrite the first three months air time. After that, the station will sell advertising spots to support the show.

Flentie says he tries to stay away from too much editorializing and instead attempts to acquaint his readers with the facts so they can make their own decisions. He might include an interview with a biologist from the Bureau of Land Management, U.S. Fish and Wildlife Service or Dept. of Fish and Game. Or he might tell his listeners how a new piece of statewide legislation will affect their hunting plans.

The next time you're within reach of KXLO on a Tuesday morning, tune in and listen to how one group of concerned sportsmen decided to "get the word out."

SENIOR CITIZENS STILL GET A BREAK

Under the department's new hunting and fishing license structure, a $1 conservation license allows Montanans 62 or older to hunt game birds and fish. This permit replaces the former pioneer license which cost 15 cents and provided the same benefits.

At $1, the conservation license is still a good bargain for older Montanans who want to hunt birds and fish. The same licenses for younger residents cost $10.

The increased cost to senior citizens came about because the federal government considered the 15-cent charge a "token fee." As such, a portion of the department's matching funds—in this case $35,000 to $40,000 from the Dept. of the Interior—were jeopardized.

All 50 states receive money from federal excise taxes on sales of guns, ammunition and fishing tackle which aid their wildlife programs. Money coming to each state depends partly on numbers of bona fide licenses sold there. In recent years, the Dept. of the Interior has not allowed "token fees" to be counted as bona fide licenses, and Montana's 15-cent pioneer license was considered a "token fee."

Senior citizens who qualify can buy the conservation license from all Dept. of Fish and Game license agents and offices by providing proof of age. Pioneer licenses were available only at Dept. of Fish and Game offices.

RECREATIONAL ACCESS ON THE YELLOWSTONE RIVER

The Dept. of Fish and Game was involved in a recreational study and survey of the lower Yellowstone River in summer 1975, funded by the Old West Regional Commission.[1] During the study, researchers found that many recreationists were unaware of the public access sites along the river. Almost everyone agreed the river system provides fulfilling recreational opportunities. But as one middle-aged woman put it, "What we need is more places to go."

As of June 30, 1975, the department's Recreation and Parks Division offered public access and recreational opportunities on 140 fishing access sites, 11 state monuments, 34 recreation areas, 7 state parks, 1 recreation road and 1 recreation trail. Not surprisingly, the Yellowstone River has several of these sites.

Of 212 groups of persons surveyed, 68.4% indicated they would like to see another recreational area 30 miles or less from where they were at the moment. In many cases, however, one of the sites discussed below was close by, but these recreationists didn't realize it.

Any of the following areas along the Yellowstone can provide some outstanding recreational opportunities:

(1) Uninterrupted camping and fishing for trout and ling are the main attractions of **Bratten Fishing Access,** situated about 10 miles east of the Interstate 90 Greycliff turnoff on old Highway 10. The access road crosses the railroad tracks adjacent to U.S. Highway 10 and can be negotiated most of the year with a passenger car. Limited facilities at Bratten include rest rooms, water and natural boat ramp. This Sweet Grass County access area covers 147 acres.

(2) For the fisherman, trout and ling provide excellent sport and table fare at **Indian Fort Fishing Access,** situated just north of Reedpoint, off Interstate 90. Tables and rest rooms are available. Late spring run-off presents some access problems, but during other times of the year, this 15.74-acre area is extremely attractive and offers excellent picnicking and camping.

(3) **Itch-Kep-Pe Fishing Access** is situated approximately 1/4 mile south of Columbus, Mont., off Interstate 90 on Highway 307. This 26.6-acre tract lies adjacent to land provided by the Jaycees and city of Columbus. It offers tables, rest rooms, water and adequate boat launching sites. Participants in the annual Yellowstone boat float, which takes place in mid-July, make an overnight stop at Itch-Kep-Pe. Trout and ling provide fine fishing and the location of Itch-Kep-Pe—21.3 river miles downstream from Indian Fort Fishing Access—provides excellent opportunity for one-day floating and fishing trips.

(4) Fishing for ling and catfish and hunting for pheasant, waterfowl and white-tailed deer provide many gratifying smiles from sportsmen at **Isaac Homestead Game Management Area.** The area also attracts agate hunters, bird watchers and in the late spring, those who enjoy the abundance and delicious taste of wild asparagus. Administered by the department's Game Management Division, the area is situated just west of Hysham. Near Myers, old Montana Highway 311 crosses the Yellowstone River where an adequately marked gravel road going north leads to the area. Middle and late summer passenger car travel presents no problems. No facilities are present, but tremendous recreational potential exists on this 1,275-acre tract.

(5) **Rosebud Recreational Area,** comprised of two beautiful and convenient areas, is located at Forsyth, Mont. The West Rosebud Area lies east of the Highway 12 bridge crossing the Yellowstone River and the East Rosebud Area is on the north end of 15th Street in Forsyth. This 31.54-acre recreational area is equipped with all facilities, including excellent roads, children's

[1]The results of this study will be reported in a later issue of *Montana Outdoors*. The Old West Regional Commission is an organization headed by a six-member board composed of the governors of Montana, Wyoming, North Dakota, South Dakota, Nebraska and a federal co-chairman. The commission's objective is to promote orderly and rational economic development within the five member states.

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equipment and a boat ramp at the West Area. The East Area diversion dam attracts substantial numbers of local fishermen, with the chance for good success. Ling fishing is especially popular in spring when nighttime angling produces good results. In addition, paddlefish are taken in late spring through early summer. Sauger, northern pike, channel catfish and shovelnose sturgeon also answer the angler's creel call.

(6) Regionally famous for its spring and summer paddlefishing, **Intake Dam Fishing Access** is situated 17 miles northeast of Glendive on Highway 16. Well developed and maintained, Intake annually attracts large crowds on Memorial Day, even though the greatest paddlefishing success usually occurs in late June and early July. However, if your spare time doesn't coincide with paddlefishing "prime time," don't disregard Intake. Pallid and shovelnose sturgeon, channel catfish, sauger, walleye and northern pike are taken with surprising frequency by foxy fishermen who don't care for the large "spoonbill catfish." Intake is also a popular boat launching area for amateur and professional agate hunters alike, although upstream travel is restricted by the diversion dam. This 40-acre tract was leased from the Bureau of Reclamation in 1969.

(7) and (8) Lower Yellowstone River bottomlands country characterizes both **Elk Island** and **Seven Sisters Game Management areas.** Supervised and administered by the department's Game Management Division, these similar areas provide excellent waterfowl, pheasant and white-tailed deer hunting. Elk Island—situated northeast of Savage, Mont., which is just off Highway 16—encompasses 1,317 acres. Downstream approximately 11 miles, Seven Sisters—due east of Crane, Mont., which is just off Highway 16—includes 365 acres. Since both areas were purchased in 1975, they are relatively unknown and unused. However, fine fishing opportunities exist for channel catfish, walleye, sauger, northern pike, pallid and shovelnose sturgeon and ling. Rock hounds, bird watchers and fox squirrel hunters also can successfully pursue their interests.

In summary, the supply of recreational access on the Yellowstone usually exceeds the demand—even though recreationists commonly believe the opposite situation prevails. On the lower and middle Yellowstone, crowding is at a *minimum* and recreational opportunity at a *maximum.* What more could anyone want?—*Max Erickson*

• *The above article alludes to a larger subject. The department controls recreational sites statewide, but many persons aren't familiar with them. Soon,* Montana Outdoors *will provide a complete summary of these sites and what facilities they offer. Also, energy development poses serious threats to the Yellowstone, the largest, most unspoiled, free-flowing river in the continental U.S. This subject will be covered extensively in MO as decision makers prepare to cast the majestic river's future.*—Ed.

UPDATE

•*Since we've covered these issues in* Montana Outdoors, *the decision-making process has progressed, shedding new light on the developments and making an update appropriate. In the future, we'll be spending more time keeping readers informed on the progress of major development issues that affect wildlife.*—Ed.

WOLF CREEK: REVISITED

("The Subdivision Nobody Knew," March/April 1976)

While subdivision activity in the Wolf Creek area has already generated a great deal of controversy, it's a drama that has more acts yet to play. Much of the fate of this important wildlife area, comprised of both public and private land, remains up in the air.

The earlier article described how developers placed low-quality roads across state lands without permission, damaging the watershed and destroying wildlife habitat. But since the original article appeared, several new events have occurred:

• The Forestry Division of the Dept. of Natural Resources and Conservation (DNRC) permanently closed and completed damage repair on several of the illegally and improperly constructed roads.

• Bills have been sent to the developers responsible, covering the state's cost of repairing *immediate* environmental damages. (Additional invoices *may* be sent later.)

• The developers have responded angrily to the original article, "The Subdivision Nobody Knew."

Forestry Division employes worked over 1,100 hours repairing damage, not only to the road sites but also to the streams and some of the hillsides. Workmen pulled trees and other debris out of streams, built erosion control devices, disposed of slash and reseeded disturbed areas.

The amount of immediate rehabilitation work necessary in one particular area, Woods Creek, indicates the amount of environmental damage inflicted by the careless development. Some 459 man-hours were expended on this illegally constructed road. Built with slopes to 26%, this "road" extended all the way to the Continental Divide, permitting access to virtually untouched land in the headwaters of the Dearborn River. So steep was the road that 150 water bars, designed to prevent erosion, were constructed by Forestry Division employes. Larry Pyke, supervisor of the Forestry Division's Helena unit, pointed out that water bars are normally reserved for skid trails and are unnecessary on a properly constructed road.

Time and equipment expended in rehabilitation work were carefully recorded and then summed up in cash figures. According to Pyke, "We were extremely fair in formulating these bills. Whenever there was a question, we gave the developer the benefit of the doubt." Pyke also mentioned developers weren't charged stumpage for the state trees they cut down.

Bills were sent to offending developers in late April. Timberline, Inc., of Great Falls, received the largest bill, $4,873.76. James R. Gist and Associates, also of Great Falls, was charged $1,528.54.

Pyke emphasized these bills do not reflect the total amount of damage caused by the developers. "These figures reflect only the costs the state incurred for rehabilitation work, not the total environmental damages," he said. Charges to the developers for damaged streams, scarred hillsides, loss of soil and loss of long-term

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productivity will require further court action by DNRC. According to DNRC Attorney Gary Spaeth, no decision on whether to seek additional damage compensation has been made.

Perhaps James Gist, of James R. Gist and Associates, has emerged as the most outspoken of the Wolf Creek subdividers. Describing himself as "just a simple country boy trying to make a living," Gist claims he has been made out as "Genghis Khan." He calls MO's Wolf Creek article "completely unfair and unjust" and challenges the Dept. of Fish and Game to buy the land if it is so concerned.

Gist continued by accusing the Dept. of Fish and Game of wanting to "lock up" resources rather than use them. "You're the kind of folks who'd put the Mona Lisa in a bank vault," he added. Gist expounded on his philosophy of land use, "Man has dominion over the face of the earth. He can walk and live anywhere he wants, especially in the United States. That's what makes America great."

Gist was infuriated about the article's theme of "nobody knew" about the development—particularly the section that stated no local or state agency had been contacted. He pointed out that all his deeds were filed at the county courthouse which, with large-lot subdivisions such as this, is about all the developer is required by law to do.

He also claimed he has written permission from the Forestry Division to build *some* of the roads across state land, but acknowledges that he had inadvertently constructed roads over public lands in other places.

Gist finished his interview with MO by saying, "Both of us are really after the same thing—we both want to protect the land. I knew the day I went into this Wolf Creek thing I'd never get my money back, but I did it anyway—for the animals and the land. I kept others from ruining it."

Timberline, Inc., headed by Don Girard and Bill Raby at the time of the illegal construction, was less outspoken about the issue. Girard agreed the road situation was "a hell of a mess" and that "errors in judgment" had taken place. However, he blamed the faulty road construction—which included the Woods Creek road—on misinformation received from lawyers.

Girard blamed the rest of his problems in Wolf Creek on "just plain ignorance." He defended his integrity, however, saying, "I may drive faster than 55 sometimes, but other than that I bet I toe the line as much as anyone in the country." Girard said he agreed with the main point of the article—that all subdivisions should be subject to public review, regardless of size—as often he wasn't sure what was the right thing to do.

Raby said he couldn't comment on the Woods Creek road or any other of the illegally constructed roads. "I've never been up there myself," he said. "I've only flown over it a few times." Raby defended the subdividers' actions by saying, "If you own a piece of land, you have the right to do whatever you want with it, as long as you don't infringe on the rights of others." However, Raby did concede that the subdivision activity could affect such public concerns as wildlife and the watershed.

What will happen next in Wolf Creek? The developers will probably apply for easements to cross state lands to further subdivide their holdings. They will then be subject to the procedure that some persons feel the developers were attempting to avoid in the first place.

Once the Forestry Division receives applications for easements, they can evaluate them in two different ways. They can look at the easement requests individually, or they can examine the entire area and make a decision on a unit basis.

Forestry Division officials realize that granting easements to the developers would do much more than simply accommodate the subdivision. First, granting easements would definitely change land-use options for the surrounding state lands. Second, allowing road construction in this steep country would probably harm the watershed and destroy wildlife values.

The Montana Environmental Policy Act states that any action by a state agency "...significantly affecting the quality of the human environment..." requires an environmental impact statement (EIS). Pyke said, "The possibility of a full-blown EIS for Wolf Creek is very great."

Writing an EIS for the Wolf Creek easements would be simpler if the Forestry Division had a clear idea of what they want to do with state land in the area. Unfortunately, the state foresters have never done a unit plan for Wolf Creek or any other state forest. Such planning, which hasn't received a high priority from DNRC, would facilitate the decision-making process.

The Wolf Creek situation gives DNRC an excellent opportunity to make some precedent-setting decisions. Other areas—such as the Stillwater, Gallatin and Seeley—could benefit greatly from a positive stance by DNRC.

Thus, the Wolf Creek area may yet get the public review it justly deserves. The fact remains, however, that many areas won't receive such a review, simply because the land is divided into chunks larger than 20 acres.—*Hank Fischer*

POPLAR RIVER: QUALITY OR QUANTITY?

("Impact of Canadian Project Spills Over Into Montana," Nov./Dec. 1975)

Canada's Poplar River Power Project is development like we used to have in this country before federal and state environmental legislation required impact statements. The whole activity threatens to become fact before most of those affected have even heard about it. Impact statements cost a project a little time, require a few more bureaucrats and mean a little more money, but at least area residents and their political representatives know what's going on.

The Dept. of Fish and Game first heard about the Saskatchewan Power Corp.'s (SPC) plan to construct a 1,200-megawatt energy facility five miles upstream from the Montana border on Oct. 4, 1974, after a warden stopped in to visit the Daniels County sheriff. The sheriff heard the news on the Scobey radio station and the station received the tip from a Regina, Sask. newspaper. Montana's first official involvement in the project occurred Dec. 29, 1974, when Bill Christiansen, lieutenant governor and chairman of the Montana Energy Advisory Council, and some members of his staff flew to Regina for an information session. From that meeting, it was clear the Canadians had something big in mind and that the idea had been in the mill for three years. The water aspects of the big project may eventually impact the entire 3,329-square-mile Poplar River Basin, 63% of which lies in Montana. Air pollution from the operation may impact an even greater area, much of which also is in Montana.

Potential border conflicts fall under the international functions of the Canadian Dept. of External Affairs and the U.S. Dept. of State. These two organizations appointed an International Joint Commission (IJC) to investigate border problems. The IJC, in turn, appointed several boards responsible for certain sections of the border. The Poplar River Basin, which involves about 60 miles of the border, falls within jurisdiction of the International Souris-Red Rivers Engineering Board.

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This board, in the specific case of the proposed Poplar River Project, appointed in April 1975 a Poplar River Task Force composed of six representatives from the U.S., Canada, Saskatchewan and Montana. The U.S. and Montana representatives include Lt. Gov. Christiansen, Bob McPhail (Bureau of Reclamation) and George Pike (U.S. Geological Survey).

The State Dept. and its Canadian counterpart have so far only authorized the IJC to investigate and make recommendations for the *apportionment* of the water in the forks of the Poplar River. The IJC delegated the responsibility down, and for 10 months the Poplar River Task Force studied the drainage's water history and drafted a division formula. The task force's report was finished in February 1976 and released to the public at informal meetings in Scobey, Mont. and Coronach, Sask, May 5-6. These informal sessions were followed by formal hearing on the apportionment issue in these same towns May 25-27.

But division of Poplar River water is only one of the public issues. Montanans want to know about the possible effect of associated coal mining on the ground water, about the *quality* of the water sent south and about stack emissions and air pollution control. They would like to know about the development's social impacts, eventual size of the project and construction time. The IJC says these issues are out of their "terms of reference" and that the subject is being handled in Ottawa and Washington, D.C. Meanwhile, as the water apportionment issue goes up and down the chain of command, the SPC continues to build. Footings for the first 300-megawatt plant are in place, the east fork of the Poplar River has been dammed two miles north of the border, the reservoir is partially filled and tunnels for the cooling water are being built.

Residents of northeastern Montana are suspicious of big government and far-off bureaucrats. They suspect possible trade offs—a sell out on the water quality issue or a dive on air pollution enforcement—compensation to the Canadians for the mud flats the U.S. gave them with Libby Dam or the several bad features associated with North Dakota's Garrison Diversion. Some realize there is precedent for disaster: By the time the Colorado River reaches the Mexican border, it is so charged with salts, it's practically useless. Many wonder if the same will be true of the Poplar River when it reaches the Fort Peck Indian Reservation.

Quality of Poplar River water is already marginal during summer low flow. With increased reservoir evaporation and the force evaporation and consumptive water use associated with a power plant, levels of boron, manganese, sodium, sulfates and total dissolved solids should increase and might make the water unsuitable for irrigation. At the southern end of the Poplar River drainage, the Fort Peck tribes and the Bureau of Indian Affairs are investigating the possibility of constructing a 97,000 acre-foot reservoir to irrigate 20,000 acres of their reservation. The plan will work only if they get water suitable for irrigation and only if they are assured their historic stream flow. A recent application for 7,000 acre-feet of water from the Poplar River near Scobey by Burlington Northern and C.F. Industries for potash development is only one hurdle in the way of the Indians' dream—even if they do receive good water from Canada.

Another surprise is the disclosure in the Poplar River Task Force Report of the possibility of even more development in Canada. In addition to the originally proposed 1,200-megawatt facility, future development on the drawing board includes three more thermal power plants with a total production of 3,600 megawatts, two coal gasification plants capable of producing 500 million cubic feet of gas per day and three additional gasification plants capable of manufacturing 20,000 tons of ammonia a day. It has been estimated that if all of these plants were built and operated simultaneously, about 100,000 acre-feet of water per year and over two billion tons of coal (during the life of the project) would be required.

The Canadians have found enough coal. They have estimated that in 12 different deposits scattered throughout the northern part of the Poplar River Basin between 1.6 billion and 2.4 billion tons of lignite exist. But the average annual flow of the Poplar River is only 34,000 acre-feet, so supplemental water will have to be brought south to meet the yearly demand. It is difficult to imagine development of this magnitude. It is even harder to imagine the impact of such development on wildlife, soil, water and air.

The immediate concern of the Dept. of Fish and Game is the Poplar River sport fishery. The river is one of the better warm-water fishing streams in the state. It carries an excellent walleye population, quite a few northern pike, a fair number of good-sized goldeye, plus a small reproducing smallmouth bass population and some brook trout in the west fork.

Fish and wildlife, in general, are indicators of the quality of the habitat. Only a narrow margin separates the Poplar from numerous other prairie streams which contain only nongame species or no fish at all. Any reduction in the quantity or quality of water will most likely result in unsuitable habitat for desirable game fish. If a large prairie stream is not able to carry game fish, it may not be able to support a hay crop, or the people dependent on such crops.—*Mike Aderhold*

SPRINGBOARD

"Public information on controversial natural resource issues has become a crime in the eyes of many lawmakers in this country.

"Recently the Idaho Senate barely managed to reject an attempt to silence the state Fish and Game Dept. Sen. Larry Craig proposed an amendment to the department's budget which would have eliminated $224,000 from the Information and Education Division. The department has been outspoken on the potential harm to wildlife by certain new logging and mining proposals.

"Craig told the Idaho Statesman [the daily newspaper in Boise] he felt the department's role was not to inform the public of potential wildlife destruction, but instead 'management after the fact.'

"In effect Craig and 15 other senators who voted for his amendment were saying: 'Don't tell us that a new mine will be in the middle of an important elk range, just manage whatever elk are left after the mine goes in.'

"This ill-fated attempt to keep the public ignorant was a follow-up of an Idaho Mining Assn. public threat to attempt to cut Fish and Game's budget. The association made the threat after the department printed a series of articles critical of expanded phosphate development in southeastern Idaho.—*Bruce Hamilton*, High Country News, *March 26, 1976*

FOR DISCUSSION

CIRCLE WEST: COMES CLOSER

("Burlington Northern Runs More Than a Railroad," March/April 1975)

In March 1976, Burlington Northern (BN) officials met in Circle, Mont. to

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discuss with area residents plans for their McCone County coal development. Dave Gleason, director of BN's Project Development Division in Billings, outlined the following dates for work so far:

• December 1973—BN purchased the stock of Dreyer Brothers, Inc., which included the 30,000-acre Dreyer Brothers Ranch (19,000 acres deeded). The ranch lies over a sizeable portion of the over 25,000-acre Weldon-Timber Creek coal formation, estimated at 724 million strippable tons.

• June 1974—BN formally announced its decision to investigate a plan to produce ammonia, methanol-methyl fuel and synthetic diesel fuel. BN also applied to the state to appropriate 67,000 acre-feet of water annually from the Big Dry Arm of Fort Peck Reservoir.

• February 1975—BN signed a contract with the M.W. Kellogg Co. for a preliminary engineering study based on a specific (Koppers-Totzek) coal conversion technology.

• December 1975—BN signed an 18-month contract with the state of Montana to start a predevelopment base line information study. The Dept. of Natural Resources and Conservation (DNRC) is the lead agency.

• February 1976—The Kellogg Co.'s preliminary engineering plan was completed. It described a process where coal would be burned in the presence of water to form hydrogen gas. The hydrogen gas would then be combined with nitrogen from the air to form ammonia. The final product would be about 2,000 tons per day of liquid anhydrous ammonia. Another process was described for methanol production. Construction time was estimated at 50 months from contract award to production. The construction force was estimated at about 1,000 workers for three years, with a permanent work force of about 350 persons to operate and maintain both the ammonia and methanol plants.

Gleason made it clear that BN's plans were still in the preliminary study phase. He estimated it would probably take another year before the final design plans were developed for the ammonia and methanol plants, and final plans for a diesel fuel plant may be three to four years away.

In the near future, BN plans to apply to the Dept. of State Lands for a coal mine siting permit. This permit requires an estimate of mining damage and includes a four-season wildlife study.

In February 1977, BN hopes to "informally" submit plans to DNRC for its ammonia and methanol plants. By the end of 1977, BN expects the state's base line study to be completed. By that time, it will have the plans for the ammonia and methanol plants to the point where "formal" application for a utility siting permit can be made under the Major Facility Siting Act of 1974.

In short, plant construction is three to four years away and coal mining will not be possible for at least a year and a half. BN representatives said they hope to avoid a Colstrip #3 and #4 type of impasse by keeping initial plans as flexible as possible.

The Circle West Project is a reality. The impact on McCone County will be significant. And environmental costs will have to be paid.—*Mike Aderhold*

ALASKA PIPELINE: EIS OUT

("The Gas Company's Pipe Dream," July/August 1975)

Since the MO article on the proposed project to transport Alaska natural gas through 5,551 miles of buried pipe to the lower 48 states, two environmental impact statements (EIS) have been released. The first was the massive 17-volume, 53-pound Alaska Natural Gas Transportation System's EIS detailing the various costs, benefits and engineering plans. A section in the fifth volume says construction of the proposed pipeline could influence development of the coal gasification industry in North Dakota and the Great Plains area of Montana and Wyoming by providing an access to markets that does not now exist. The EIS mentions a "high coal development profile" that foresees "...20 coal gasification plants in the northern Great Plains by the year 1985, and 41 by the year 2000. Forty-one such plants would produce about 3.69 trillion cubic feet of gas annually...."

This is interesting because both the Montana and North Dakota legislatures formally requested taps on the natural gas line so they could use some of the gas. Both states were repeatedly told they would not receive such a tap. In short, for the environmental damage this line will cost Montana and North Dakota, neither state will receive any gas benefits, but both can probably expect environmental degradation.

Commenting on wildlife all along the U.S. route, the EIS goes on to say (page 1,069 of Vol. 5), "There will be a permanent reduction in the local populations of many of the prominent wildlife species since the habitat listed as lost is of a limiting nature for these species. These same areas are also indispensable elements of the life history of many songbirds and small mammals so that there will be an overall local reduction in populations of a whole spectrum of animal life and also reductions in the diversity of animal life as certain animals can no longer find the right combination of food, cover, denning, nesting or hibernating areas or other vital factors. For year-round resident species the impact of these losses on man's direct use of the local environment for recreational, cultural, aesthetic and scientific purposes may seem relatively minor except when regarded as one more step in the elimination of natural habitats." That says enough.

The second EIS was a 1,259-page, three-volume review of the first EIS by the Federal Power Commission (FPC). It said social and economic benefits of Alaska gas delivery to the contiguous states will be marginal. The volume of gas, roughly 2.5 billion cubic feet per day, will constitute from 4% to 7% of U.S. consumption of natural gas in the 1980-1990 time frame, or less than 1% of total fuel consumption.

The FPC recommended that if the pipeline is built, it follow an alternative route that would enter the U.S. near St. Vincent, Minn., thereby missing Montana and North Dakota.—*Mike Aderhold*

NORTH FORK: FS CUTS BACK ON LEASING

("Good-bye North Fork?," Jan./Feb. 1976)

The FS has released a final environmental impact statement (EIS) on the proposed oil and gas leasing in the North and South forks of the Flathead River. Apparently, almost total public opposition to the leases prompted the FS to substantially cut back on the number of leases, at least temporarily.

Briefly, Texas Pacific Oil Co., Inc. requested leases on about 236,000 acres of national forest lands. In a draft EIS on the proposed leasing, the FS recommended approval on about 166,000 acres. However, in the final EIS, the FS trimmed this back to about 91,000 acres by "deferring" consideration on about 73,000 acres. The FS feels exploration and/or development of oil and gas in the area could damage "potentially important" habitat for threatened and endangered species. The primary concern was for the grizzly bear, now officially classified as a threatened species under the Endangered Species Act of 1973, and the

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northern Rocky Mountain wolf, classified as endangered under the same act.

The FS hopes the deferred leases won't be considered until critical habitat for both species is delineated and designated by the U.S. Fish and Wildlife Service. Thus, this 73,000 acres will be "held in suspense" until results on present research projects are available.

Apparently, leasing will proceed on the other 91,000 acres if the Bureau of Land Management accepts the FS recommendations. However, the FS recommended a long list of "special requirements" to go with the leases—i.e., no temporary camps on national forest land, keep noise levels down, no water quality damage, use of "natural screening, low profile equipment and earthstone painted structures," no flaring of gas unless absolutely necessary, etc.

Surely, the final recommendations will meet opposition, just as the draft EIS did. Many protesters want *no* oil and gas development in this area. But public response did have impact. According to the final EIS, "About 95 per cent were opposed, 1 per cent were in favor of and 4 per cent had qualified opinions."—*Bill Schneider*

editorial

what good is a grizzly?

•*The following editorial by Steve Jessen appeared in the Feb. 19, 1976 Forsyth Independent. We thought it well worth repeating in* Montana Outdoors. *The author is one of those persons starting to see the vital connection between wild animals such as the grizzly and "the American Way of Life."*—Ed.

The Montana Dept. of Fish and Game has come up with another one of its exquisitely beautiful documentaries about Montana wildlife. The latest one concerns the grizzly bear and its struggle for survival against an ever-decreasing habitat.

In viewing the film and letting myself be assaulted by its beautiful photography of Montana's high country—the evergreens, the surging mountain streams, all topped off by a montage of Montana sunsets silhouetting its mountain peaks, I could easily imagine the envy that Eastern residents have of us after viewing these traditional, although unrepresentative, views of life in Montana as a whole.

Comparing these scenes of the grizzly in its native habitat—the animal whose scientific designation translates into "the bear of the most horrible nature"—and another grizzly pacing back and forth within the rock walls and iron bars of a well-tended but nonetheless confining Midwestern zoo, it was easy to have a little sympathy for the plight of the creature whose last habitat appears to be doomed.

The grizzly, symbol of the Dept. of Fish and Game, sees its habitat being devoured by timber concerns, cultivating the renewable resource in order to house an expanding population and keeping the society informed and solvent through the use of wood for paper products. Ranchers are extending into its habitat, transforming its land into grazing land. One rancher's opinion supposedly mirrored that of his colleagues when he stated that he was using the land for the more noble purpose of feeding a world whose population for the most part is starving. "What good is the grizzly bear?", he asks. Add to these pressures those of a population at large faced with more leisure time and money on its hands and wishing to spend a portion of that time and money on a cabin in the woods and it's easy to see where the horrible bear, whose place in the scheme of things is very minor, cannot long survive.

The rancher's question, "What good is the grizzly bear?", was never answered in the film.

When the lights came on we were plunged back into the living color noncelluloid world of power plants, pollution, poisons, crimes of passion, death and taxes.

A short while later, the meaning of the film suddenly came to me. It arrived late two nights afterward as I was going over some testimony which will be presented concerning opposition to [Colstrip] Units #3 and #4, where it is repeatedly hinted that an acceptable alternative to construction of the plants would be an expansion of the mining industry for export of coal to other

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load centers. The film was not about grizzly bears. It was about the Western ethic.

The haunting rancher's question, "What good is the grizzly bear?", began to rephrase itself as if it were coming from the collective lips of 200 million Americans eyeing the resources buried under eastern Montana and the grizzly habitat lying in the mountains and forests of western Montana and shouting, "What good is an undeveloped Montana?"

I'm not so sure that any of us could explain to a group of outsiders outnumbering us 400 to 1 why we should be allowed to retain our existing life styles. Especially since there is heated debate at present on whether our life style is not long overdue for a change.

This dilemma is illustrated to a degree by an examination of the retrenchments made in the doctrines of environmentalists in the past half a decade.

In the beginning the doctrine was no more strip mining. Two mines are enough.

Today it is acceptable for an environmentalist in Rosebud County to state that additional mines are all right, as long as their coal is for export only.

What will be the environmental doctrine *du jour* tomorrow?

All our opinions have undergone some repeated buffeting and resulting changes since coal was discovered in Rosebud County. But we are still like the grizzly bear.

If bears could talk, they could probably convince the rancher as to their proper place under heaven. However, we should begin to consider the question of 200 million other Americans and come up with a convincing answer lest in 50 or 60 years our unique way of life becomes absorbed and lost in the hodgepodge better known as the American Way of Life.—*Steve Jessen*

contributors

Montana Outdoors is pleased to feature the front cover painting of the American bald eagle by **Joe Thornbrugh**. The artist, who lives in the beautiful Bitterroot Valley of southwestern Montana, works from his studio in Victor and spends much time observing the various species of birds which frequent the Ravalli Wildlife Refuge near Stevensville. Largely self taught, his basic training was taken at Art Instruction Schools of Minneapolis. He is taking a bird study course at Cornell University's Laboratory of Ornithology. On July 1, an exhibit featuring over 30 of his works opened at the Los Angeles County Museum of Natural History. The exhibit will run six months. Limited editions of 1,776 signed prints of the American bald eagle—like MO's bicentennial cover—are available from Joe Thornbrugh, Box 708; Hamilton, MT 59840, or by phoning 406-363-2815. Price per print is $30 plus a $3.50 mailing and packaging charge.

About this time each year, most gardeners are plagued by some unwelcome critters in their backyard plots. What are some sane, rational alternatives to pesticides that will still result in wormless cabbage, healthy potatoes or unmunched-on tomatoes? If you're interested in "Gardening Without Pesticides," turn to page 2. **Ken Knudson** provides some simple, natural alternatives to the harmful, smelly pesticide can. Americans seem to be sold on the idea that poisons are necessary for gardens to thrive. But Knudson points out natural controls work perfectly well in a small area like a home garden and he tells you what to use for specific pests. He also provides a list of herbs and ornamental plants that repel certain insects. Knudson is the department's water pollution control biologist. He earned his B.A. in zoology and his M.S. in aquatic biology, both from the University of Montana, Missoula. He is the department's representative on the State Pesticide Review Committee and the Governor's Vector Control Advisory Council. Before joining the Department in 1974, he served as a water pollution biologist with the Texas Parks & Wildlife Dept., investigating some large-scale abuses of pesticides.

The expedition of Meriwether Lewis and William Clark carried the destiny and the flag of a young and vibrant nation with it—westward across thousands of miles of unmapped wilderness, up the wide Missouri, over the Rocky Mountains and on to the Pacific Ocean. Assigning high priority to the quest for knowledge, Lewis and Clark meticulously recorded observations about the characteristics, inhabitants, resources and wildlife of the land through which they passed. As part of MO's bicentennial commemoration, **Ken Walcheck** has returned to the expedition's journals and other sources and retold their descriptions of wildlife in Montana. In addition, from Lewis' and Clark's journals and other records of the expedition, Walcheck has painstakingly accomplished what we believe to be a first: He has plotted on a series of maps, the mammals, waterfowl, grouse, birds, fish and reptiles which Lewis and Clark and members of their expedition sighted in Montana. Dates are included and the maps provide a comprehensive picture of the scope of the expedition's observations. A history and archaeology buff, Walcheck is the department's information officer in Miles City. He has published several technical papers in the area of ornithology and served as an assistant professor of biology at Northern Montana College in Havre. He earned a B.S. in wildlife conservation and biology from Wisconsin State University in Stevens Point and his M.S. in applied science (ecology) from Montana State University, Bozeman. He worked as a ranger-naturalist with the National Park Service in Mt. McKinley, Yellowstone and Crater Lake National parks. Turn to his article on page 15.

MO would like to extend special thanks to **Don Breiby**, cartography chief for the Dept. of Natural Resources and Conservation, and his staff for the long hours they spent on final preparation of the maps and illustrations for Ken Walcheck's article. Their efforts have insured that readers will be able to easily grasp the scope and detail of the expedition's observations.

as Lewis and Clark saw it

MONTANA WILDLIFE 170 YEARS AGO

by Ken Walcheck

On May 14, 1804, a group of robust, enterprising, young men fired with enthusiasm left Camp Wood, near present-day St. Charles, Mo., and pushed their flotilla of canoes, pirogues and keelboats into the turbid waters of the Missouri River—a river still running cold and heavy with distant snowmelt. No farewell speeches or blaring trumpets marked the departure of Meriwether Lewis, William Clark and their men. One of the most extraordinary adventures in American history—the Lewis and Clark Expedition—vanished with misleading quiet into an uncharted wilderness for over two years.

On Aug. 18, 1805, 15 months after leaving St. Charles, the expedition—the Corps of Discovery—camped about 16 miles southwest of present-day Dillon, Mont. This site, occupied until Aug. 24, became known in the Lewis and Clark literature as Camp Fortunate because of the crucial meeting with the Shoshonis in the vicinity. The explorers, according to Clark's reckoning, had traveled some 3,096 long, tedious river miles since leaving Camp Wood. All expeditions of scientific discovery, no matter how well disciplined and

continued

planned, have moments of overcast and doubt. Lewis, on this date, wrote a stirring passage in his daily diary that was charged with an electrifying assurance that the Corps of Discovery would succeed in carrying out Pres. Thomas Jefferson's comprehensive directives:

"This day I completed my thirty first year, and conceived that I had in all human probability now existed about half the period which I am to remain in this Sublunary world. I reflected that I had as yet done but little, very little, indeed, to further the hapiness of the human race, or to advance the information of the succeeding generation. I viewed with regret the many hours I spent in indolence, and now soarly feel the want of that information which those hours would have given me had they been judiciously expended. but since they are past and cannot be recalled, I dash from me the gloomy thought, and resolved in future, to redouble my exertions and at least indeavour to promote those two primary objects of human existence, by giving them the aid of that portion of talents which nature and fortune have bestoed on me; or in future, to live *for mankind,* as I have heretofore lived *for myself.*"

The 1804-06 Lewis and Clark Expedition has been well documented as a classic in the vast literature of discovery and exploration, but the full scope of the scientific accomplishments has never been fully appreciated. From their collective effort emerged an incredible accumulation of information in the disciplines of ethnology, geography, cartography, mineralogy, meteorology, zoology and botany. Few, if any, scientists have ever undertaken an assignment so challenging.

Of all the reminiscent remarks which have attempted to add additional stature to the achievements of the expedition, Paul Russell Cutright's summary remarks in his book, "Lewis and Clark: Pioneering Naturalists," come closest to identifying with the true merits of the collective efforts of the expedition. He writes: "When Thomas Jefferson wrote his own epitaph, he said he wanted to be remembered for three things: as author of the Declaration of Independence; as creator of the Statute of Virginia for religious freedom; and as founder of the University of Virginia. If Jefferson had realized how central the Lewis and Clark Expedition was to a golden age in American history, and the full scope of its accomplishments, then he, motivated by the same sense of values that caused him to list the founding of the University of Virginia as one of the three rubrics in his epitaph, might well have added a fourth."

In his detailed letter of instruction to Lewis, Jefferson instructed the explorers to observe "the animals of the country generally, and especially those not known in the U.S. the remains and accounts of any which may [be] rare or extinct." Needless to say, the journals bulge with biological information, fruits of close, continued attention to daily events and observations. The journals contain the first reliable descriptions of wildlife in the Missouri and Columbia River drainages. From the detailed accuracy of many of their descriptions, Lewis and Clark can be credited with the discovery of such species as the mule deer, pronghorn antelope, bighorn sheep, kit fox, prairie dog and several other rodents, sage grouse, blue grouse, western grebe, Lewis' woodpecker, western tanager and numerous other song birds and several important species of fish such as the cutthroat trout and Arctic grayling and several species of western reptiles and amphibians.

Louis Pasteur, renowned microbiologist, once wrote, "Great discoveries are made by those prepared to make them." That Lewis was a keen-eyed observer endowed with inherent attributes as an objective and systematic naturalist, as well as being blessed with excellent common sense, is quite evident in his painstaking notes on wildlife. Conisder, for example, Lewis' attentiveness in describing the bull snake *(Pituophis catenifer)* in comparison with that of Clark:

Aug. 5, 1804. Lewis—"Killed a serpent on the bank of the river adjoining a large prarie. Length from nose to tail 5 F. 2 In.; circumpherence in largest part 4½ In.; number of scuta on belly 221; number of scuta on tail 53. No pison teeth therefore think him perfectly inocent, eyes, center black with a border of pale brown-yellow Colour of skin on head yellowish green with black specks on the extremity of the scuta which are pointed or triangular—colour of back, transverse strips of black and dark brown, of an inch in width, succeeded by a yellowish brown of half that width, the end of the tale hard and pointed like a cock's spur. the sides are speckled with yellowish brown and black. two roes of black spots on a lite yellow ground pass throughout his whole length on the upper points of the scuta of the belly and tale, ½ Inch apart this snake is vulgarly called the cow or bull snake from a bellowing nois which it is said sometimes to make resembling that anamal, tho' as to this fact I am unable to attest it, never having heard them make that or any other nois myself."

Aug. 5, 1804. Clark's description of the same species—"Snakes are not plenty, one was killed today, large and resembling the rattle Snake, only something lighter."

Lewis was also adept in observing what would have seemed trivial or of no importance to even a well-trained scientist. The journals teem with numerous examples of his skill as both observer and reporter on the wildlife scene.

• Physiological observations—Oct. 16, 1804 (vicinity of Emmonsburg, N.D.) "This day took a small bird alive of the order of the [blank space in diary] or goatsuckers [poor-will]. it appeared to be passing into the dormant state. on the morning of the 18th the mercury was at 30a.° [Fahrenheit] the bird could scarcely move. I run my penknife into it's body under the wing and completely distroyed

its lungs and heart yet it lived upwards of two hours this fanominon I could not account for unless it proceeded from the want of circulation of the blood."

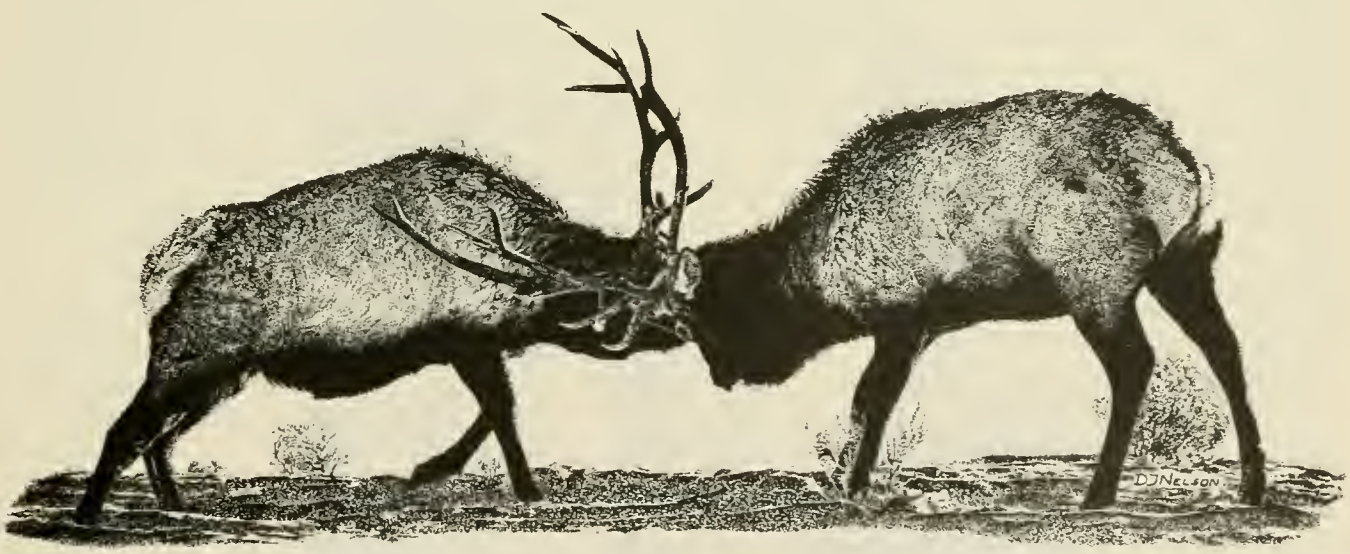
In 1949, 145 years after Lewis' observation, ornithologist E. C. Jaeger would further Lewis' observation on the hibernation of the poor-will and find that the dormancy period extended over a winter period of 85 days. Its body temperature, taken on five different days, ranged from 64.4°F. to 67.6°F. while the surrounding air temperature on the same days ranged from 63.5°F. to 75.3°F.

• Ecological observations—April 13, 1805 (vicinity of the mouth of the Little Missouri River) "This lake and it's discharge we call goos Egg from the circumstance of Capt. Clark shooting a goose while on her nest in the top of a lofty cotton wood tree, from which we afterwards took one egg. the wild gees frequently build their nests in this manner, at least we have already found several in trees, nor have we as yet seen any on the ground, or sand bars where I had supposed from previous information that they most commonly deposited their eggs."—Lewis

• Geographic distribution of wildlife populations—Feb. 16, 1806 (Fort Clatsop, near present-day Astoria Ore.) "The brown, white or grizly bear are found in the rocky mountains in the timbered parts of it or Westerly side but rarely; they are more common below the rocky mountain on the borders of the plains where there are copses of brush and underwood near the water courses. they are by no means as plenty on this side of the rocky mountains as on the other, nor do I believe that they are found at all in the woody country, which borders this coast as far in the interior as the range of mountains [Cascades] which, pass the Columbia between the Great Falls [Cecilo Falls] and rapids of that river."—Lewis

When the Corps of Discovery crossed the 104th meridian and entered what is now Montana, they definitely were not impressed with what they alluded to as a hostile environment consisting of crusty alkali beds, spiny beds of cactus spines, shifting sands and impoverished bottomlands. Lewis classified it as "truly a desert barren country." They were, however, quite impressed with the capacity of the prairie environment as a wildlife producer. Above the mouth of the Yellowstone River, Lewis wrote, "The whol face of the country was covered with herds of Buffaloe, Elk and Antelopes; deer are also abundant, but keep themselves more concealed in the woodland. the buffaloe, Elk and Antelope are so gentle that we pass near them while feeding ,without apearing to excite any alarm among them; and when we attract their attention, they frequently approach us more nearly to discover what we are, and in some instances pursue us considerable distance apparently with that view."

Although never so stated in the journals, Lewis also perceptively observed that fluctuating changes occurred between a wildlife species and different habitats in terms of species composition and density. On May 24, 1805, near the vicinity of the mouth of the Musselshell River, Lewis wrote, "Game is becoming more scarce, particularly beaver, of which we have seen but few for several days the beaver appears to keep pace with the timber as it declines in quantity they also become more scarce."



And on May 10, 1805, near Fort Peck, Mont., he wrote, "and saw several deer of the Mule kind of immence size, and also three of the Bighorned anamals from the appearance of the Mule deer and the bighorned anamals we beleive ourselves fast approaching a hilly or mountainous country; we have rarely found the mule deer in any except a rough country; they prefer the open grounds and are seldom found in woodlands or river bottoms, and are pursued, the[y] invariably run to the hills or open country as the Elk do. the contrary

continued

happens with the common [white-tailed] deer."

Wildlife abundance, as well as a lack of wildlife in certain areas, during this era in Montana and elsewhere in its original wilderness setting is certainly beyond the comphehension of the present generation. The Lewis and Clark diaries do not provide a complete picture of wildlife populations because of the urgency in performing other duties as well as coping with the many hardships and hazards during their wilderness trek. They noted areas of wildlife abundance and scarcity and attributed this to many factors ranging from seasonal migrations to changes in habitat.

Historians, on numerous occasions, have written with descriptive rhetoric of the "flowing ocean of pristine grasses" and of the "tall, limber grasses" that would "bend under a passing horse's belly." A reader, thus, is under the impression that Montana and other parts of the Great American Steppe once consisted of one endless sea of grasses rippling under capricious prairie winds. Lewis and Clark were the first to document that such ecological impressions were not necessarily correct. During their time-consuming portage around the Great Falls of the Missouri River, Lewis commented on how the spiny beds of prickly pear added another dimension to their growing list of trials and tribulations. Their Great Falls portage cut across one of numerous buffalo migration routes that the expedition encountered during its journey through the plains country. The abundance of prickly pear in such areas served as mute testimony that overgrazing was but one of many factors operating in plant successional stages. Contrary to common belief, overgrazing in certain areas of the state occurred long before the first Texas Trail herds rolled into Montana.

Historians unintentionally have also left many with the impression that elk were primarily a plains animal which in early times did not inhabit the mountains, but were driven there, to an unnatural habitat, by an advancing civilization. Their contention, undoubtedly, was supported by some early travelers who failed to find elk, or at any rate failed to mention them in certain mountainous areas. Unfortunately, little, if any, consideration was given to elk migrations which altered their distribution during such periods of movement. Again, it is Lewis who points out that elk are tolerant of many diverse environments—"They are common to every part of this country, as well the timbered lands to the plains, but are much more abundant in the former than the latter."

The "Journals of Lewis and Clark" fail to provide a complete picture of the geographic distribution of white-tailed deer and mule deer in Montana. Many of their remarks refer only to "deer," making it impossible to determine to which species they were referring. Their observations suggest deer were more abundant in eastern Montana than the western part of the state. Raymond D. Burroughs includes a short section on the amount of game killed on the expedition in his book, "The Natural History of the Lewis and Clark Expedition." He comments on the deer found in western Montana and eastern Idaho: "Deer were scarce in the Lemhi River Valley west of the Beaverhead Mountains where only 21 were killed during 9 days of hunting in late August, 1805. No deer were seen during a week spent in going over the Lost Trail Pass, but 2 were killed on the headwaters of the Bitterroot River, and several were killed in the vicinity of Lolo Creek. Game was very scarce on the western slope of the Bitterroots. After going over Lolo Pass only one deer, 9 grouse and a coyote were taken between Sept. 12 and Sept. 22, and it became necessary to kill 3 colts and 2 horses for food."

Lewis' notes on game scarcity while traversing the Lolo Trail read: "we killed a few Pheasants, and I killed a prarie woolf which together with the balance of the horse beef and some crawfish which we obtained in the creek enabled us to make one more hearty meal, not knowing where the next was to be found." That rations were a little on the short side becomes quite apparent when one realizes that the normal food intake for the 33-member crew on a 24-hour basis consisted of one buffalo, or four deer, or an elk and a deer.

Numerous researchers have focused attention on the roles played by Lewis and Clark as discoverers of plants and animals previously unknown to science. Each author has contributed additional dimensions to the Lewis and Clark discoveries. Contributions from authors such as Elliot Coues, Raymond D. Burroughs, Paul Russell Cutright and Donald Jackson have added greater emphasis and depth to the botanical and zoological discoveries of the two explorers.

Despite their luminous contributions, some doubts exist about their listing of certain animals not formerly observed or described, on the dates Lewis and Clark encountered them in what is now known as Montana. The following attempts to provide a complete listing of those vertebrates discovered and described for the first time by Lewis and Clark and members of their expedition in Montana. Questionable observations such as the wolverine, snowshoe hare, Brewer's blackbird, ruffed grouse, McCown's longspur and upland plover are not listed because inadequate description provided an insufficient basis for identification.

MAMMALS

moose *(Alces americana)*

Moose were not directly observed by Lewis and Clark in Montana, but an entry in John Ordway's journal and a notation by Lewis in his diary on Reuben Fields' observation indicate this species was observed in the state.

May 10, 1805 (vicinity of the mouth of the Milk River) "Saw mooce deer which was much larger than the common deer."—Ordway

July 7, 1806 (vicinity of Lincoln) "Reuben Fields wounded a moos deer this morning near our camp."—Lewis

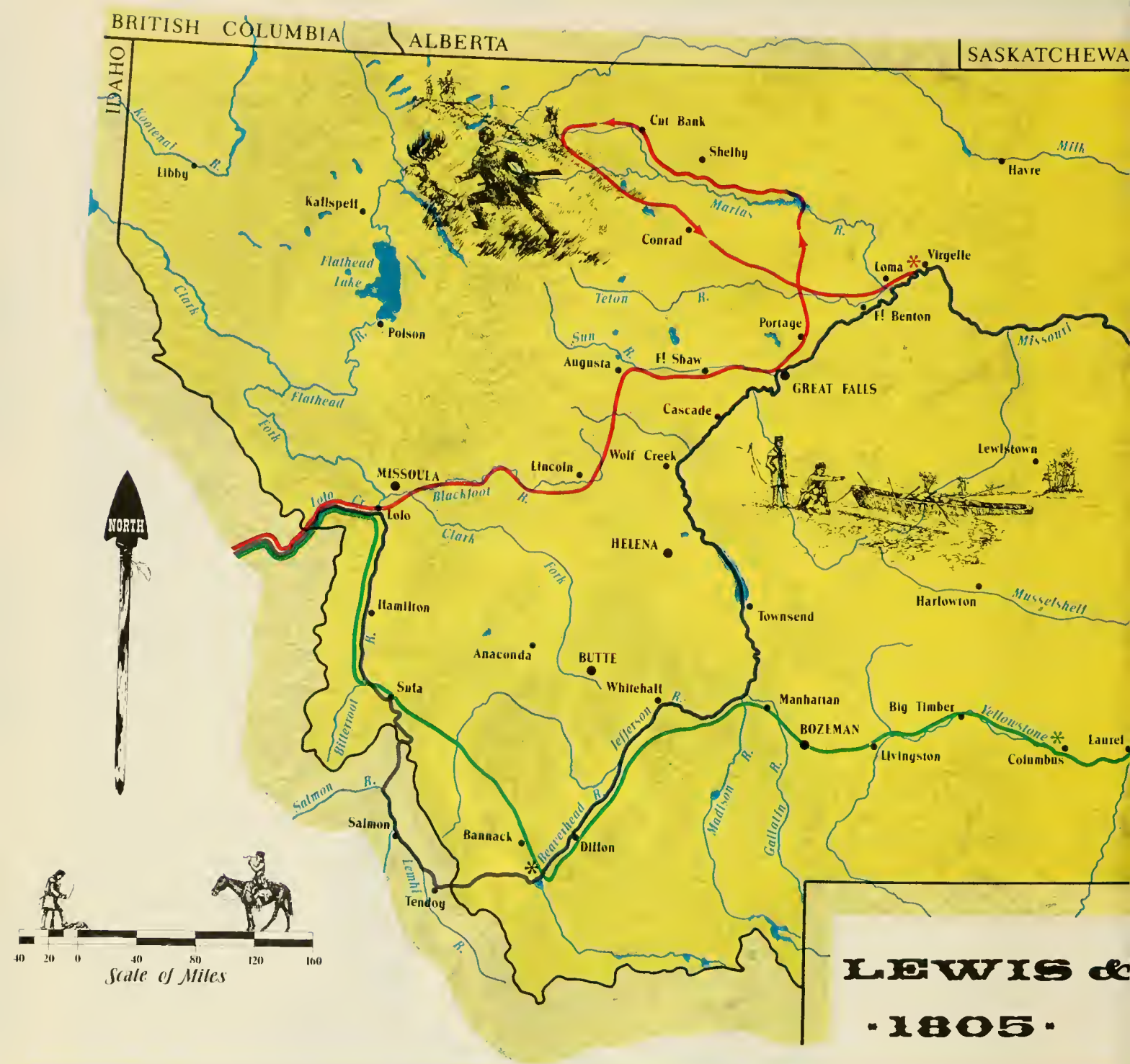
kit fox *(Vulpes velox)*—July 8, 1805 (vicinity of Great Falls)

"The party who were down with Capt. Clark also killed a small fox which they brought with them. it was a female appeared to give suck, otherwise it was so much like the comm[on] small fox of this country commonly called the kit fox that I should have taken it for a young one of that species; however, on closer examination it did appear to differ somewhat; its colour was of a light brown, its ears proportionably larger, and the tale not so large or the hair not so long which formed it. they are very delicately formed, exceedingly fleet, and not as large as the common domestic cat. their tallons appear longer than any species of fox I ever saw and seem therefore prepared more amply by nature for the purpose of burrowing. Ther is sufficient difference for discrimination between it and the kit fox, and to satisfy me perfectly it is a distinct species."—Lewis

thirteen-lined ground squirrel *(Citellus tridecemlineatus)*—July 8, 1805 (vicinity of Great Falls)

"the men also brought me a living ground squirrel which is something larger than those of the U'States or those of that kind which are also common here. this is a much ha[n]dsomer anamal. like the other it's principal colour is a redish brown but is marked longitudinally with a much greater number of black or dark bro[w]n stripes; the spaces between which is marked by ranges of pure white circular spots, about the size of a brister blue shot. these colours embrace the head neck back and sides; the tail is flat, or the long hair protecting horizontally from two sides of it only gives it that appearance. the belly and breast are of much lighter brown or nearly white. this is an inhabitant of the open plain altogether, where it burrows and resides; nor is it like the other found among clifts of rocks or in the woodlands. their burrows

continued



Lewis' and Clark's route west*

Lewis' route east (Arrows indicate direction of travel.)*

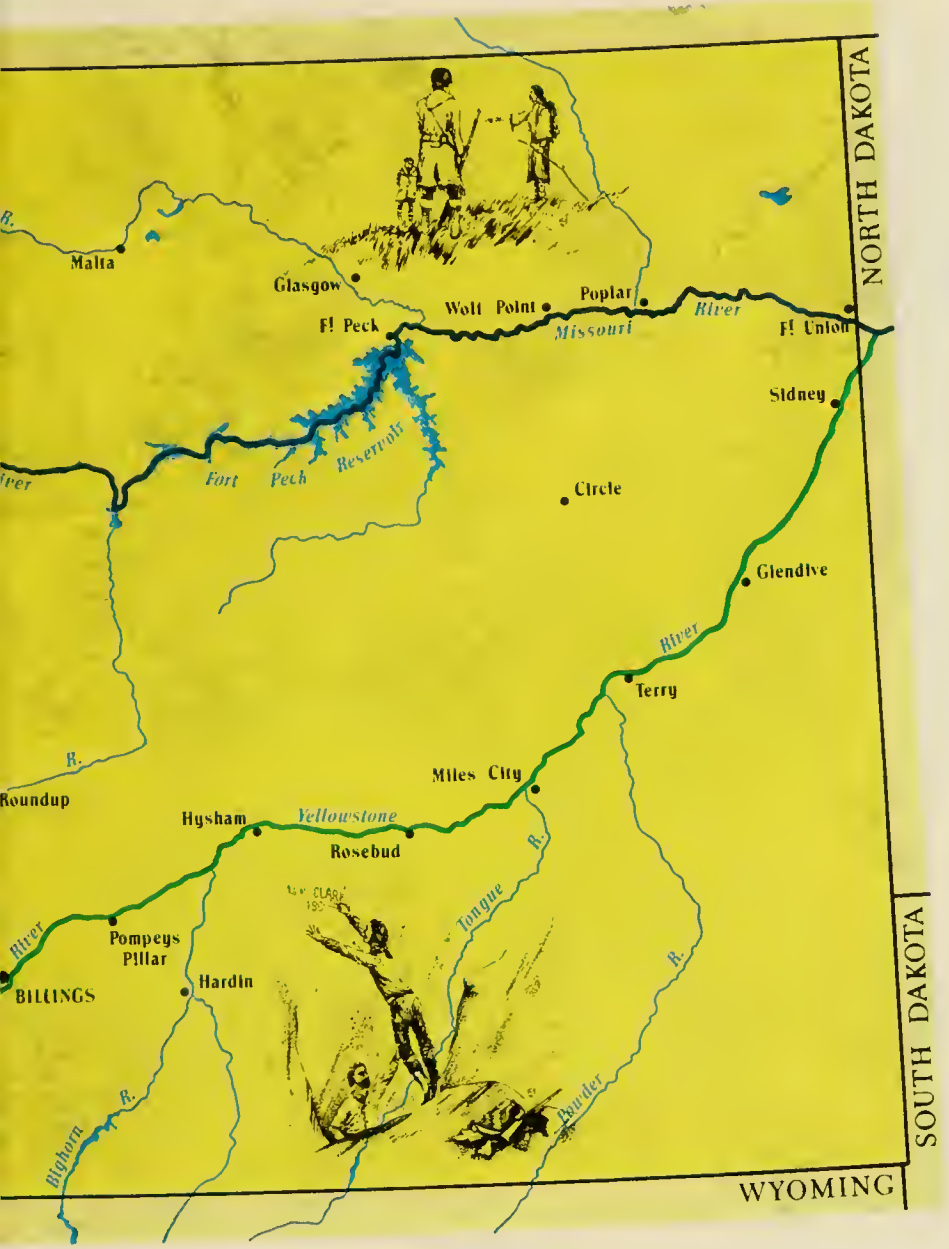
Clark's route east*

*Numbered arrows correspond to wildlife sightings described in the legends on the following two maps and indicate the point at which the sighting was made.

* * * Points at which the expedition discontinued or resumed river travel

Questionable observations are followed by interrogation marks. Where possible, determination between white-tailed and mule deer has been made. Otherwise, the observation is recorded as "deer." Entries may not be entirely chronological, since several days were often spent exploring in a given area. Lewis' observations on the Missouri River from Virgelle to the North Dakota border (1806) are not identified because of the expedition's coverage of this route in 1805. Poor-will and robin are recorded in the meteorological records of the expedition, not in the "Journals."

The maps on this and the following pages, and all artwork for this article, were produced by the Cartography Bureau of the Montana Dept. of Natural Resources and Conservation. The drawings were done by D.J. Nelson and D.C. Howard. The three maps were compiled by Gary Wolf, using the Montana portion of the "Mosaic of Imagery from the Earth Resources Technology Satellite-1 [ERTS-1]" of the entire U.S. The project was supervised by D.R. Breiby, Chief, Cartography Bureau.



CLARK EXPEDITION
IN MONTANA ·1806·

THE CORPS OF DISCOVERY

In its scope and achievement, the Lewis and Clark Expedition of 1804-06 stands as a giant among the major explorations of the North American continent—and the world. The expedition carried the destiny as well as the flag of a young and vibrant nation westward across thousands of miles of uncharted wilderness—up the wide Missouri, over the Rocky Mountains and on to the Pacific Ocean.

During their long journey through Montana, the explorers encountered alien tribes and menacing animals. On foot, astride fleet Indian ponies and by boat, they pushed over formidable mountain ranges, floated surging rivers, portaged over sagebrush plains laced with pads of prickly pear cactus.

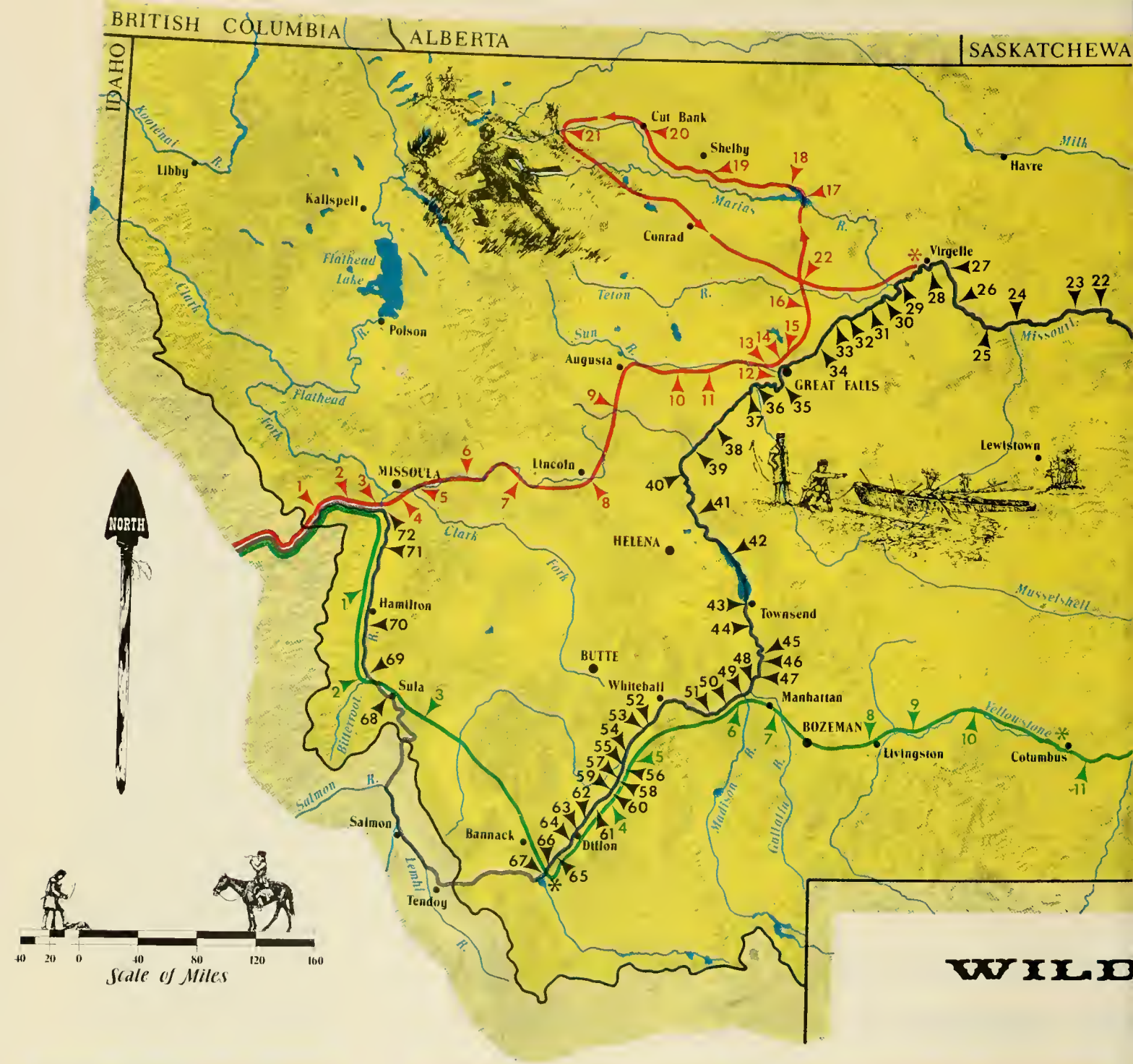
And what was accomplished? Most obvious, of course, was that the expedition served as a catalyst in sparking the imagination of a growing nation that would develop into one of the greatest nations in the world. Assigning high priority to the quest for knowledge, Meriwether Lewis and William Clark meticulously recorded observations about the characteristics, inhabitants and resources of the land through which they passed.

The expedition traveled in Montana about six months of the total time consumed and about one-half of the total distance explored. During the westward journey through Montana in 1805, the explorers followed the Missouri River to the Three Forks of the Missouri, and then up the Jefferson and Beaverhead rivers to the present site of Clark Canyon Reservoir. At this point, the expedition headed west and traveled overland, crossing the Continental Divide over Lemhi Pass into Idaho. After proceeding northward through Idaho, the travelers re-entered Montana and exited the state via the Lolo Trail over the Bitterroot Mountains.

On the return trip through Montana, Lewis and Clark separated at Travelers' Rest, just south of present-day Missoula. Lewis, accompanied by nine of his men and five Nez Perce guides set off in a northeasterly direction, crossing the Continental Divide over Lewis and Clark Pass and returned to the plains country to check the source of the Marias River and other tributaries of the Missouri. During the return leg of the trip, Lewis and three of his men clashed with eight Piegan Blackfeet Indians resulting in the death of two Indians.

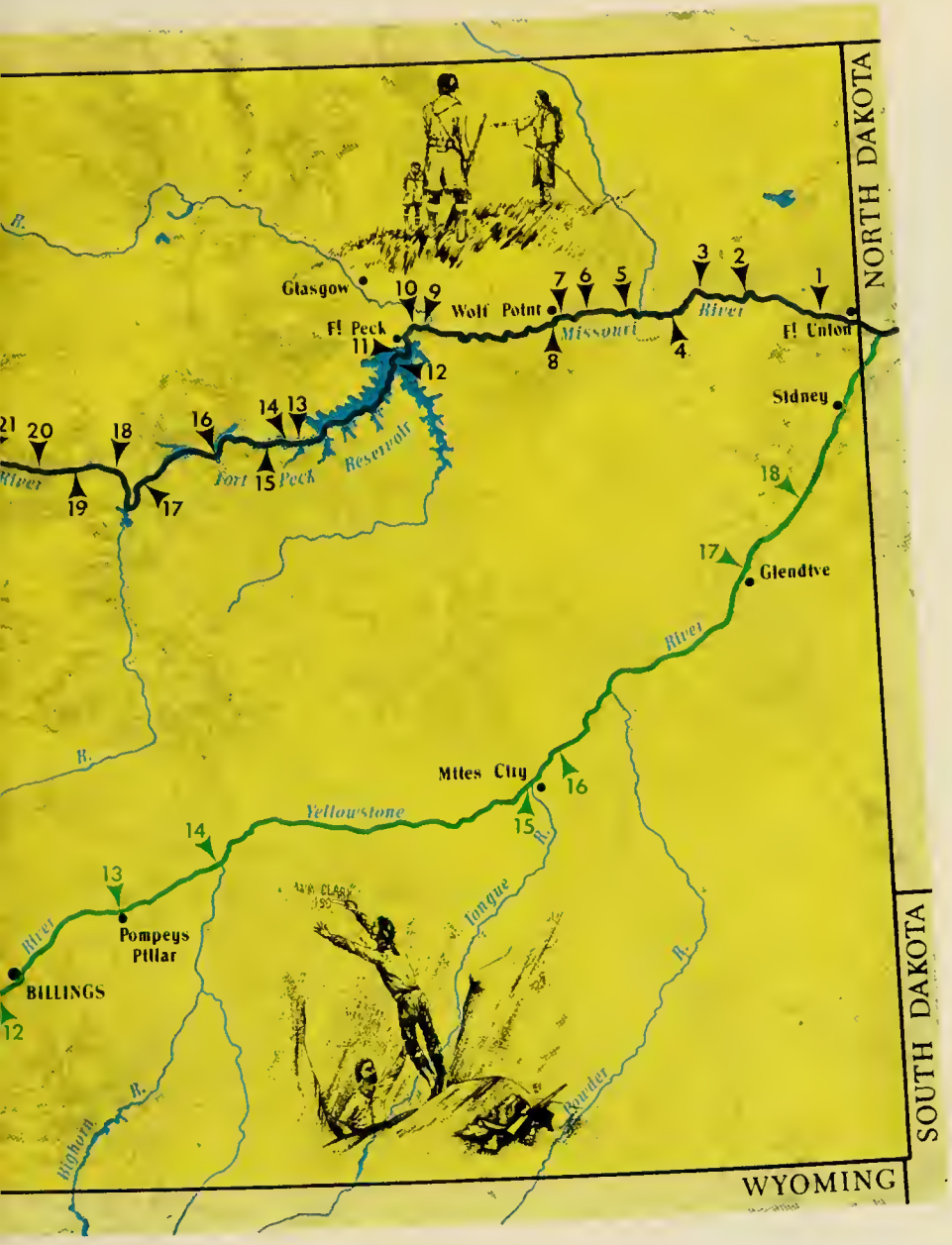
Clark, with the larger segment of the party, headed southward to recover the canoes that were cached near the forks of the Beaverhead River. At the Three Forks of the Missouri, part of the crew pushed down the Missouri to rendezvous with the Gass detachment of the Lewis party at the Great Falls of the Missouri. Clark and the rest of the group, including Sacagawea, headed east, crossed Bozeman Pass and dropped down to the upper Yellowstone at a point nine miles from the pass near present Livingston. Water travel was resumed east of what is now Columbus. Just east of present-day Billings, the expedition stopped on the south side of the Yellowstone near a remarkable sandstone formation. Clark named it Pompy's Tower (now Pompeys Pillar) after Sacagawea's infant son whom he had nicknamed "Pomp." Near a spot on the path leading to the top of the formation, Clark inscribed his name and the date.

The separated portions of the expedition finally united on Aug. 12, 1806, in North Dakota, some 30 miles upstream from the entrance of the Little Missouri River.



LEWIS AND CLARK'S WESTWARD ROUTE--1805

1 mule deer, elk, antelope, buffalo, grizzly, beaver (4/28)
2 deer, elk, antelope, buffalo, grizzly, wolves (4/29)
3 elk, antelope (4/30)
4 elk, antelope, buffalo, beaver (5/1)
5 deer, elk, buffalo, beaver (5/2)
6 white-tailed deer, elk, antelope, buffalo, beaver, porcupine (5/3)
7 buffalo (5/4)
8 antelope, grizzly, wolf, coyote (5/5)
9 moose (5/10)
10 white-tailed and mule deer, elk, antelope, buffalo, wolves, beaver (5/8)
11 elk, buffalo (5/9)
12 grizzly (5/11)
13 grizzly (5/14)
14 deer, buffalo, beaver (5/15)
15 deer, antelope, buffalo, grizzly, mountain lion (5/16)
16 buffalo (5/17)
17 deer, elk, grizzly, beaver (5/19)
18 deer, elk, buffalo (5/21)
19 deer, black bear (5/22)
20 deer, elk, antelope, buffalo, grizzly, Richardson ground squirrel (?) (5/23)
21 beaver, Richardson ground squirrel (?) (5/24)
22 buffalo, bighorn sheep, striped skunk (5/25)
23 elk, whitetail jackrabbit (5/26)
24 bighorn sheep (5/28)
25 buffalo, bighorn sheep, wolves, beaver (5/29)
26 buffalo (5/30)
27 mule deer, elk, buffalo, bighorn sheep, red fox (5/31)
28 mule deer, buffalo, bighorn sheep (6/1)
29 mule deer, elk, buffalo, grizzly (6/2)
deer, elk, antelope, buffalo, wolves (6/3)
elk, buffalo, grizzly, wolves, red fox, longtail weasel (6/4)
mule deer, elk, antelope, buffalo, wolves, red fox, blacktail prairie dog, Richardson ground squirrel (?) (6/5)
mule deer, antelope, buffalo, grizzly, wolves (6/6)
30 elk (6/11)



LIFE SIGHTINGS

MAMMALS

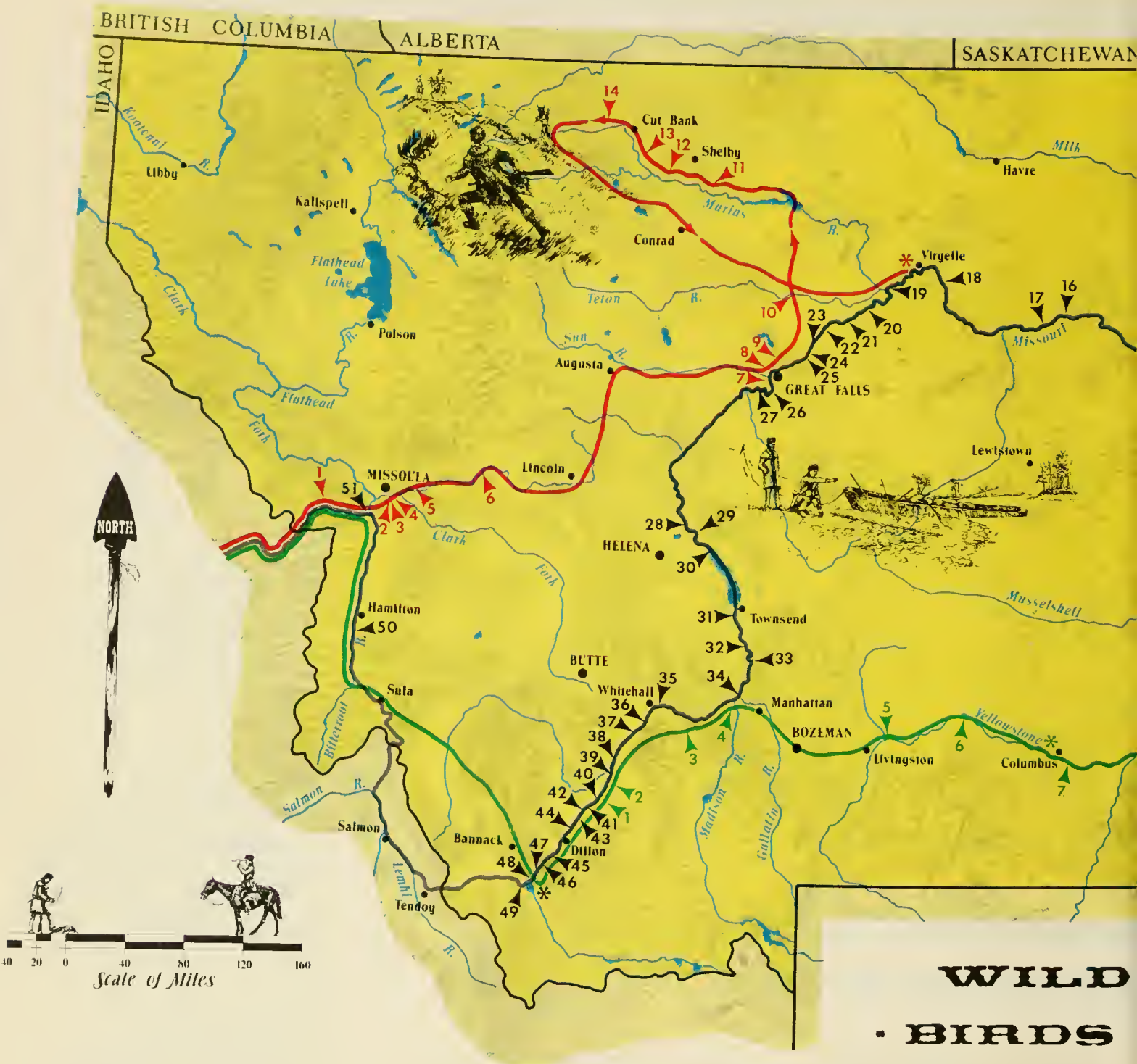
31 mule deer, antelope, buffalo, grizzly, wolves, beaver, Richardson ground squirrel (?) (6/12)
32 buffalo (6/13)
33 buffalo, grizzly, wolverine (?) (6/14)
34 deer, elk, antelope, buffalo, grizzly, wolves, beaver (6/16-6/28)
35 deer, elk, antelope, buffalo, grizzly, kit fox, beaver, river otter, bushytail woodrat, thirteen-lined ground squirrel (6/22-7/12)
36 buffalo (7/13)
37 deer, elk, buffalo, river otter (7/15)
38 elk, buffalo (7/16)
39 bighorn sheep (7/17)
40 deer, elk, bighorn sheep (7/18)
41 elk, antelope, bighorn sheep, beaver, river otter (7/20)
42 deer, elk, antelope, otter (7/22)
43 deer, elk, antelope, beaver, river otter (7/23)
44 deer, antelope, grizzly, beaver, river otter (7/24)
45 deer, elk, antelope, grizzly, beaver, river otter (7/25)
46 deer, grizzly, beaver, river otter (7/26)
47 deer, elk (7/28)
48 deer, antelope, bighorn sheep, beaver, river otter, muskrat (7/27)
49 white-tailed deer (7/29)
50 deer, antelope, grizzly, beaver (7/30)
51 grizzly (7/31)
52 deer, elk, antelope, bighorn sheep, grizzly (8/1)
53 deer, elk, antelope, beaver, Columbian ground squirrel (8/2)
54 deer, antelope, mountain lion, beaver, river otter (8/3)
55 deer, elk (8/6)
56 deer, antelope, beaver, river otter (8/4)
57 deer (8/10)
58 deer, antelope (8/5)
59 deer, beaver, river otter, muskrat (8/8)
60 deer, antelope, beaver, river otter (8/11)
61 antelope (8/9)
62 deer, wolverine (?) (8/12)
63 deer, antelope, beaver, river otter (8/13)
64 deer, antelope (8/14)
65 deer (8/15)
66 deer, antelope (8/16)
67 deer, antelope, beaver (8/17-8/23)
68 deer, bighorn sheep (9/4)
69 badger (9/5)
70 deer (9/7)
71 deer, elk (9/8)
72 deer (9/9)
deer, beaver (9/10)

LEWIS' EASTWARD ROUTE--1806

1 mule deer (6/27)
2 deer (6/29)
3 deer, elk, bighorn sheep, red squirrel (6/30)
4 deer (7/2)
5 Columbian ground squirrel (?), red squirrel (7/4)
6 antelope (7/5)
7 deer, antelope, Columbian ground squirrel (7/6)
8 moose, beaver (7/7)
9 deer, antelope, buffalo, wolves, blacktail prairie dog (7/8)
10 deer, antelope, buffalo, wolves (7/9)
11 elk, buffalo, grizzly (7/10)
12 elk, buffalo (7/11)
13 buffalo (7/13)
14 grizzly (7/15)
15 antelope, grizzly (7/16)
16 buffalo (7/17)
17 antelope, buffalo, wolves, whitetail jackrabbit (7/18)
18 antelope, buffalo, wolves (7/19)
19 elk, antelope, buffalo, wolves (7/20)
20 Columbian ground squirrel (?) (7/23)
21 deer, antelope, wolves, kit fox (7/26)
22 buffalo (7/27)

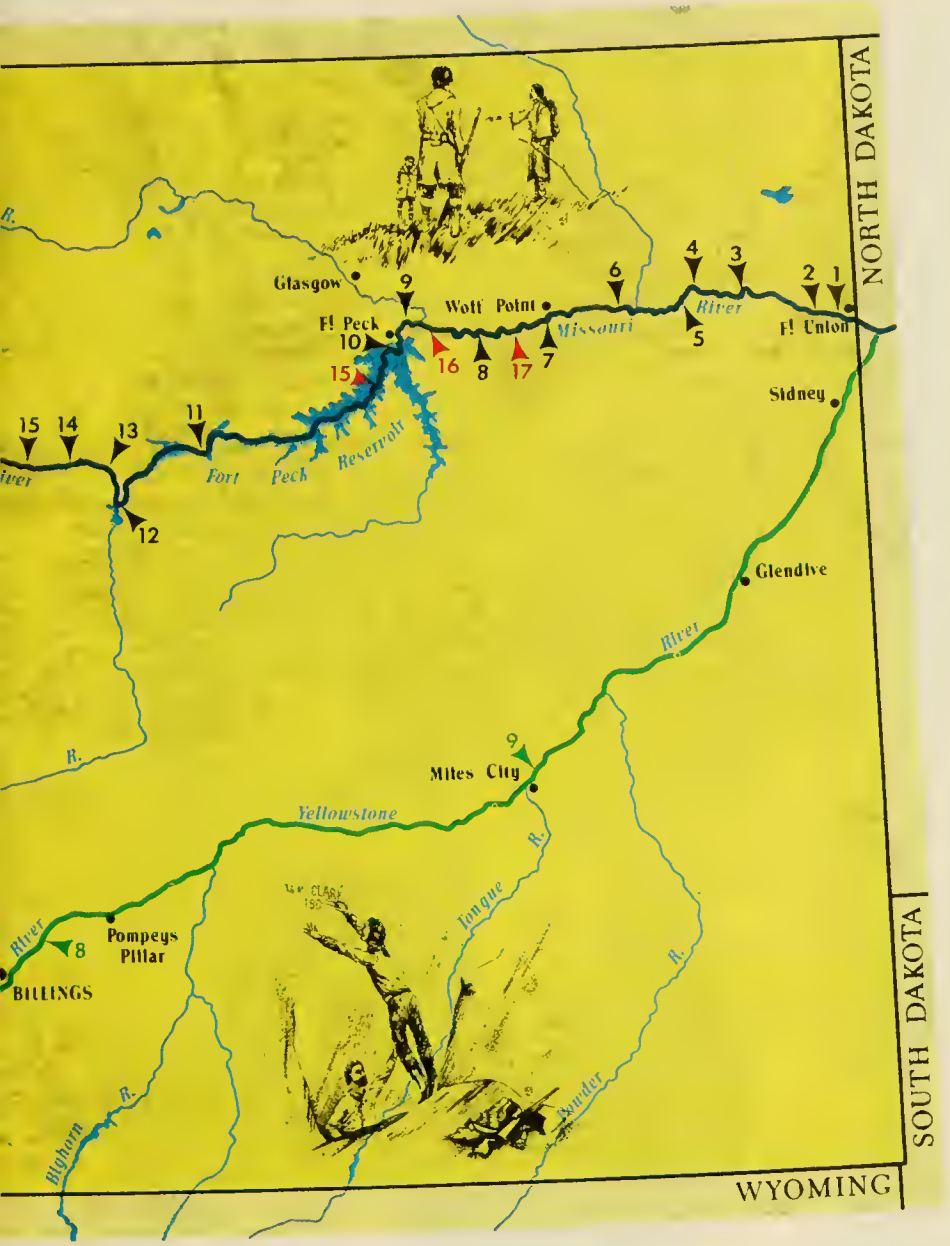
CLARK'S EASTWARD ROUTE--1806

1 deer, bear, Columbian ground squirrel (7/3)
2 deer, bighorn sheep (7/4)
3 snowshoe hare (?) (7/6)
4 deer, antelope, bighorn sheep, beaver, river otter (7/10)
5 deer, beaver (7/11)
6 deer, elk, wolves, beaver, river otter (7/13)
7 deer, elk, antelope, beaver (7/14)
8 elk, antelope, black bear (?) (7/15)
9 elk, antelope, bear (7/16)
10 deer, elk, buffalo (7/17)
11 deer, elk, antelope, buffalo, grizzly, wolves (7/19-7/23)
12 deer, elk, buffalo, coyote, beaver (7/24)
13 elk, buffalo, bighorn sheep, wolves (7/25)
14 deer, elk, antelope, buffalo, bighorn sheep, beaver (7/27)
15 beaver (7/29)
16 grizzly (7/30)
17 buffalo, grizzly, wolves (7/31)
18 buffalo (8/1)



LEWIS AND CLARK'S WESTWARD ROUTE--1805

1 bald eagle, Canada goose, whistling or trumpeter swan, black-billed magpie (4/27)
2 Canada goose (4/28)
3 common crow (4/30)
4 Canada goose (4/30)
5 American avocet (5/1)
6 Canada goose, whistling or trumpeter swan, brant (?) (5/3)
7 Canada goose, snow goose, brant (?) (5/5)
8 bald eagle, belted kingfisher (5/7)
9 bald eagle (5/8)
10 willet (5/9)
11 poor-will (?), prairie rattlesnake (5/17)
12 great horned owl (5/20)
13 sharp-tailed grouse (5/21)
14 sharp-tailed grouse, channel catfish (5/22)
15 Canada goose (5/23)
16 softshell turtle (5/26)
17 hairy woodpecker or downy woodpecker (5/28)
18 cliff swallow (5/31)
19 long-billed curlew, McCown's longspur (?) (6/4)
turkey vulture, sage grouse (6/5)
mourning dove, house wren, American goldfinch, robin, Brewer's blackbird (?), common grackle (?) (6/8)
mountain bluebird, loggerhead shrike, eastern kingbird (6/10)
goldeye, Flathead chub (?) (6/11)
20 cliff swallow, goldeye (6/12)
21 Canada goose, cutthroat trout, goldeye, Flathead chub (?) (6/13)



LIFE SIGHTINGS

REPTILES · FISH ·

22 Canada goose (6/14)
23 Canada goose, common crow, Brewer's blackbird (?), prairie rattlesnake, cutthroat trout, channel catfish (6/15)
24 wood duck, common merganser, chestnut-collared longspur or McCown's longspur, Brewer's blackbird (?), horned lark, western meadowlark (6/19-6/23)
25 painted turtle (?), cutthroat trout, channel catfish, goldeye (6/25)
26 common nighthawk (6/30)
Canada goose (7/2)
Flathead chub (?) (7/10)

27 golden eagle, passenger pigeon, belted kingfisher, long-billed curlew, mourning dove, brown-headed cowbird (7/11-7/13)
28 Lewis' woodpecker, common merganser (7/20)
29 Canada goose, cutthroat trout (7/21)
30 Canada goose, sandhill crane, mountain plover or upland plover (7/22)
31 Canada goose, sandhill crane, hognose snake (7/23)
32 Canada goose, sandhill crane, long-billed curlew, common merganser; common, western or plains garter snake (?) (7/24)

33 Canada goose (7/25)
34 sandhill crane, mallard, wood duck, cliff swallow, belted kingfisher (7/27-7/29)
35 blue grouse, piñon jay (8/1)
36 Canada goose, mallard, Lewis' woodpecker, common merganser, prairie rattlesnake (8/2)
37 Canada goose, long-billed curlew, cutthroat trout, mountain whitefish (8/3)
38 Canada goose, sandhill crane (8/4)
39 Canada goose (8/5)
40 Canada goose, sandhill crane (8/8)
41 Canada goose (8/9)
42 bald eagle, osprey, prairie rattlesnake (8/10)
43 Canada goose (8/11)
44 sage grouse (8/12)
45 prairie rattlesnake (8/15)
46 cutthroat trout (8/16)
47 cutthroat trout (8/18)
48 longnose sucker (8/19)
49 Arctic grayling (8/22)
50 sandhill crane (9/7)
51 sharp-tailed grouse, red-headed woodpecker, pileated woodpecker (9/9)

LEWIS' EASTWARD ROUTE--1806

1 spruce grouse (?) (6/26)
2 spruce grouse (?) (6/29)
3 pileated woodpecker (7/1)
4 sandhill crane, sharp-tailed grouse, common raven, long-billed curlew, robin, mountain plover or upland plover, Lewis' woodpecker, western meadowlark, horned lark, mourning dove, eastern kingbird, brown-headed cowbird, common flicker (7/2)
5 white pelican, passenger pigeon (7/5)
6 whistling or trumpeter swan, common raven, long-billed curlew, robin, mourning dove, eastern kingbird (7/6)
7 passenger pigeon, mourning dove, brown-headed cowbird (7/11)
8 passenger pigeon (7/12)
9 red-headed woodpecker, black-billed cuckoo (?) (7/16)
10 American avocet (7/17)
11 Canada goose (7/19)
12 Canada goose (7/20)
13 passenger pigeon, common raven, common crow, mourning dove (7/19)
14 passenger pigeon (7/25)
15 bald eagle, golden eagle, black-billed magpie, red-headed woodpecker (8/3)
16 common nighthawk (8/4)
17 Canada geese, white pelican (8/5)

CLARK'S EASTWARD ROUTE--1806

1 Canada geese (7/10)
2 Canada goose, sandhill crane (7/11)
3 Canada goose (7/13)
4 Canada goose (7/16)
5 mountain sucker (7/16)
6 white pelican, American avocet (7/17)
7 passenger pigeon (7/21)
8 Canada goose, passenger pigeon, common crow, mourning dove, cliff swallow (7/23)
9 softshell turtle, channel catfish (7/29)

sometimes like those of the mole run horizontally near the surface of the ground for a considerable distance, but those in which they reside or take refuge strike much deeper in the earth."—Lewis

bushytail woodrat *(Neotoma cinerea)*—July 2, 1805 (vicinity of Great Falls)

"after our return in moving some of the baggage we caught a large rat. it was somewhat larger than the common European rat, of lighter colour; the body and outer part of the legs and head of a light lead colour, the belly and inner side of the legs white as were also the feet and ears. the toes were longer and the ears much larger than the common rat; the ears uncovered with hair. the eyes were black and prominent the whiskers were long and full. the tail was reather longer than the body and covered with fine fur or poil of the same length and colour of the back. the fur was very silkey, close and short. I have frequently seen the nests of these rats in clifts of rocks and hollow trees but never before saw one of them. They feed very much on the fruit and seed of the prickly pear; or at least I have seen greater quantities of the hulls of that fruit lying about their holes and in their nests."—Lewis

BIRDS

sage grouse *(Centrocercus urophasianus)*—June 5, 1805 (vicinity of the Marias River)

"I saw a flock of the mountain cock, or a large species of heath hen with a long pointed tail which the Indians informed us were common to the Rockey Mountains. I sent Shields to kill one of them, but he was obliged to fire a long distance at them and missed his aim."—Lewis

blue grouse *(Dendragapus obscurus)*—Aug. 1, 1805 (vicinity of Whitehall)

"as I passed these mountains I saw a flock of the black or dark brown phesants; the young phesant is almost grown we killed one of them. this bird is fully a third larger than the common phesant of the Atlantic states. it's form is much the same. it is boo[r]ed nearly to the toes and the male has not the tufts of long black feathers on the sides of the neck which are so conspicuous in those of the Atlantic. their colour is a uniform dark brown with a small mixture of yellow or yelloish brown specks on some of the feathers particularly those of the tail, tho' the extremities of these are perfectly black for about one inch. the eye is nearly black, the iris has a small dash of yellowish brown. the feathers of the tail are reather longer than that of our phesant or pattridge as they are Called in the Eastern States; are the same in number or eighteen and all nearly the same length, those in the intermediate part being somewhat longest. the flesh of this bird is white and agreeably flavored."—Lewis

willet *(Catoptrophorus semipalmatus)*—May 9, 1805 (vicinity of Fort Peck)

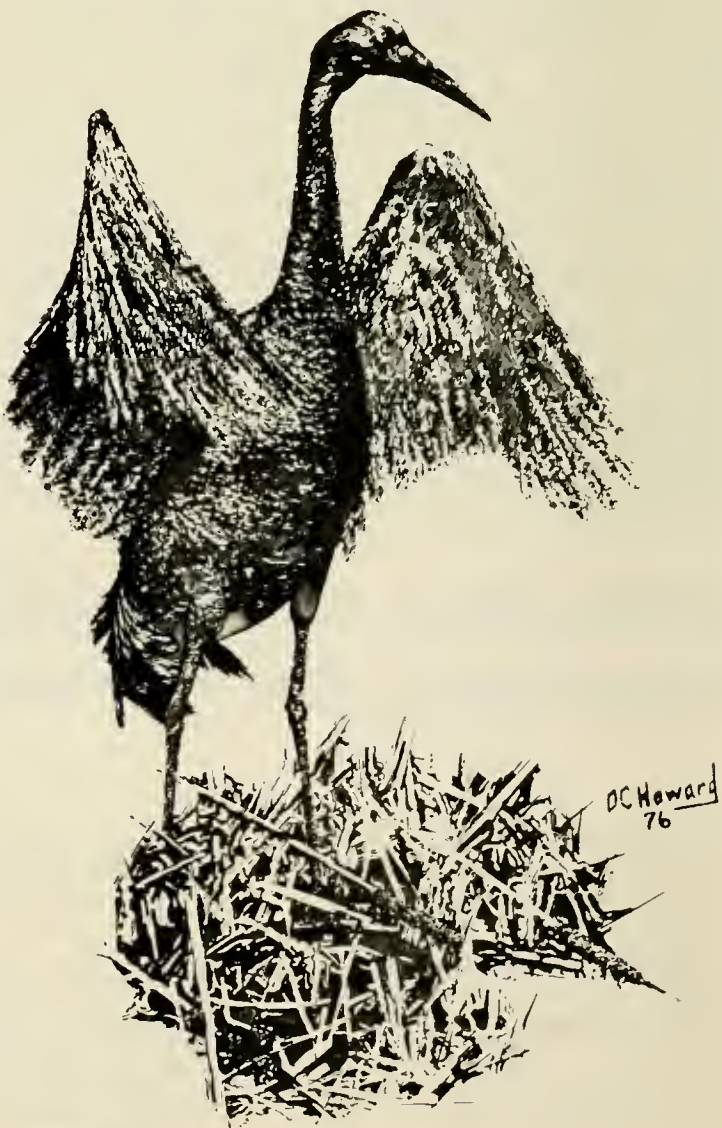
This species was discovered and fully described by Lewis. "I killed four plover this evening of a different species from any I have yet seen." (Due to the length of Lewis' description, the rest of his diary entry is not given here.)

Lewis' woodpecker *(Asyndesmus lewis)*—July 20, 1805 (vicinity of Helena)

"I saw a black woodpecker [or crow] today about the size of the lark woodpecker as black as a crow. I indevoured to get a shoot at it but could not. it is a distinct species of woodpecker; it has a long tail and flys a good deel like the jay bird." (Lewis provides a detailed description of this species in his May 27, 1806 diary entry during the expedition's encampment on the Clearwater River, Idaho.)

Piñon jay *(Gymnorhinus cyanocephala)*—Aug. 1, 1805 (vicinity of Whitehall)

"I also saw near the top of the mountain among some scattering pine a bluebird about the size of the common robbin. it's action and form is somewhat that of the jay bird and never rests long in any one position but constantly flying or hoping from sprey to sprey. I shot at one of them but missed it. their note is loud and frequently



repeated both flying and when at rest and is a char-ah', char'-ah, char-ah', as nearly as letters can express it."—Lewis

loggerhead shrike *(Lanius ludovicianus)*—June 10, 1805 (near the mouth of the Marias River)

"I saw a small bird today which I do not recollect ever having seen before, it is about the size of the blue thrush or catbird, and its contour not unlike that bird. the beak is convex, moderately curved, black, smoth, and large in proportion to its size. the legs were black, it had four toes of the same colour on each foot, and the nails appeared long and somewhat in form like the tallons of the haulk, the eye black and proportionately large. a bluish brown colour occupyed the head, neck, and back, the belly was white; the tail was reather long in proportion and appeared to be composed of feathers of equal length of which a part of those in the center were white the others black, the wings were long and were also varigated with white and black, on each side of the head from the beak back to the neck a small black stripe extended imbrasing the eye. it appeared to be very busy in catching insects which I presume is it's usual food; I found the nest of this little bird, the female which differed but little in size or plumage from the male was setting on four eggs of a pale blue colour with small black freckles or dots."—Lewis

FISHES

goldeye *(Hiodon alosoides)*—June 11, 1805 (above mouth of the Marias River)

"the other species is precisely the form and about the size of the well known fish called the hickory shad or old wife, with the exception of the teeth, a rim of which garnish the outer edge of both upper and lower jaw; the tongue and pallet are also beset with long sharp teeth bending inwards, the eye of this fish is very large, and the iris a silvery colour and wide.—we had seen none until we reached that place and took them in Missouri above its junction with that river."—Lewis

cutthroat trout *(Salmo clarki)*—June 13, 1805 (vicinity of Great Falls)

"Goodrich had caught half a douzen very fine trout and a number of both species of the white fish. These trout are from sixteen to twenty three inches in length, precisely resemble our mountain or speckled trout in form and the position of their fins, but the specks on these are of a deep black instead of the red or gould colour of those common to the U.'States. these are furnished long sharp teeth on the pallet and tongue and have generally a small dash of red on each side behind the front ventral fins; the flesh is of a pale yellowish red or when in good order of a rose red."—Lewis

mountain whitefish *(Prosopium williamsoni)*

Elliot Coues, author of "History of the Expedition Under the Command of Lewis and Clark," identified the species Lewis described on Aug. 19, 1805, that was seined in the Beaverhead River, as a northern sucker. A closer examination of the entry for this date strongly suggests that the mountain whitefish was the fish described by Lewis and *not* a sucker.

"this evening I made a few of the men construct a sein of willow brush which we hawled and caught a large number of fine trout and a kind of mullet about 16 Inches long which I had not seen before. the scales are small, the nose is long and obtusely pointed and exceeds the under jaw. the mouth is not large but opens with foalds at the sides, the colour of it's back and sides is of a bluish brown and belley white; it has the faggot bones, from which I have supposed it to be of the mullet kind. the tongue and pallate are smooth and it has no teeth."—Lewis

mountain sucker *(Catostomus platyrhynchus)*—July 16, 1806 (vicinity of Livingston)

"one of the men brought me a fish of a species I am unacquainted with; it was 8 inches long formed like a trout. it's mouth was placed like that of the Sturgeon a red streak passed down each side from the gills to the tail."—Clark

flathead chub *(Hybopsis gracilis)* (?)—June 11, 1805 (vicinity of the Marias River)

"Goodrich who is remarkably fond of fishing caught several dozen fish of two species,—one about 9 inches long of a white colour round and in form and fins resembles the white chub common to the Potomic; this fish has a smaller head than the Chubb and the mouth is beset both above and below with a rim of fine sharp teeth; the eye moderately large, the puple [pupil] dark and the iris which is narrow is of a yellowish brown colour, they bite on meat or grasshoppers. this is a soft fish, not very good, tho' the flesh is of a fine white colour . . . we had caught some few before our arrival at the entrance of Maria's River."—Lewis

This species was originally identified as a sauger *(Stizostedion canadense)* by Elliot Coues. The basis for questioning the sauger centers around the fact that Lewis demonstrated quite well in his writings that he had a fairly good knowledge of fish. It seems very likely that a species Lewis said resembled the white chub common to the Potomac River (presumably a fallfish) would be minnow-like, as chubs are in the minnow family. There is a very good possibility that the fish Lewis saw was the flathead chub which reaches nearly 12 inches in Montana waters.

One fragment of overcast on a positive identification remains. Lewis refers to the "rim of fine sharp teeth" in both jaws. Members of the minnow family have toothless jaws. Did Lewis err in his description? Or did he record his observations at a later date and rely on his memory in writing his description? Or, was he correct?

Arctic grayling *(Thymallus arcticus)*—Aug. 22, 1805

"late in the evening I made the men form a bush drag, and with it in about 2 hours they caught 528

continued

very good fish, most of them large trout. among them I now for the first time saw ten or a douzen of a white speceis of trout. they are of a silvery colour except on the back and head, where they are of a bluish cast. the scales are much larger than the speckled trout, but in their form position of their fins teeth mouth &c they are precisely like them. they are not generally quite as large but equally well flavored."—Lewis

REPTILES

hognose snake *(Heterodon nasicus)*—July 23, 1805 (vicinity of Townsend)

"I saw a black snake today about two feet long the belly of which was as black as any other part or as jet itself. it had 128 scuta on the belley 63 on the tail."—Lewis

softshell turtle *(Trionyx ferox)*—May 26, 1805 (vicinity of the mouth of the Musselshell River)

"in this creek I saw several softshelled Turtles which were the first that I have been seen this season; this I believe proceeded reather from the season than from their non existence in the portion of the river from the Mandans hither."—Lewis

Better than 170 years have passed since the Corps of Discovery departed from Montana. What were some of their significant contributions and what was accomplished? No person, now or in the future, can provide complete and realistic answers to these questions. A close scrutiny of their accomplishments in Montana reveals such facts as:

- Lewis and Clark provided the first reliable documentation of numerous plants and animals for the state. Their abbreviated list of animals would be expanded at a later date to 101 mammals, 345 birds, 80 fishes and 34 reptiles and amphibians.
- Many of the plants and animals discovered and described in Montana were new to science. Unfortunately, Lewis and Clark received little recognition for their discoveries because in most instances they could not produce specimens to verify their descriptions. The attempt to collect as many species as possible certainly was made, but inadequate preparation, preservation and methods of transportation destroyed many of their specimens.

Lewis' and Clark's observations also extended to the geographic range of plants and animals that were previously known only in the eastern United States—for example, the passenger pigeon.

- Lewis' detailed biological descriptions had a

stimulating impact on pioneering future scientific studies in such diverse areas as ecology, taxonomy, plant and animal geography, physiology and phenology. Lewis paved the way as a brilliant teacher in the art of observation and note-taking which served as a master key for opening doors to future riches in the extensive corridors of natural history.

- In today's world of advanced wildlife technology, we can fully appreciate Lewis' comments on wildlife abundance, as well as a lack of wildlife in certain areas. Although his impressions are not spelled out in modern-day ecological terms, we have the first documentation which alludes to the fact that whether we are talking about historical or present-day times, there is always a fluctuating balance between a wildlife species and its habitat—it changes and adapts as conditions vary. It involves such dynamic and competitive elements as vegetation, disease, predators and it exists within the limitations imposed by weather.
- Lewis provided the first factual evidence that grizzly bear and elk occupied a wide diversity of habitats and were not primarily plains animals as many later suspected.
- Lewis' and Clark's reports on the abundance of beaver and otter in the Missouri River drainage played an important role in sparking the development of a golden era of continental fur trade that would lead to Montana's first economic development.

An examination of the animals observed by Lewis and Clark in Montana raises the question by some as to why certain conspicuous species such as the great blue heron, cottontail rabbit, leopard frog and other common animals were not mentioned. And why wasn't more effort expended in describing and comparing different plant and animal communities encountered on the journey? In attempting to answer such questions, one must remember that during this era there were no universities with curricula in ecology and wildlife management and trained biologists didn't exist. Furthermore, their primary goal was not taxonomic, but rather to explore the Missouri River and other principal streams that would provide the most direct and practical water transportation for commerce between the Mississippi and the Pacific.

One should also keep in mind that many travel miles were won at the expense of a fair amount of prodigious labor and many physical discomforts, all of which made it difficult to observe and record wildlife. Some of the hardships reported by Lewis are quite graphic and it is remarkable that his biological notes are as copious and complete as they are.

And last, when the expedition was completed, several historians were involved in transcribing from the original codices. As a result, some paragraphs were duplicated—sections misplaced, clauses omitted, essential words deleted—all of which contribute to the doubt cast on some wildlife observations.

Better than four decades ago, novelist Thomas Wolfe wrote, "You Can't Go Home Again." He was referring to a nation, as Mark Twain suggested of Tom Sawyers and Huckleberry Finns, eager to explore the next wilderness, impatient with traditions and the status quo. If Lewis and Clark retraced their journey today, they would find only a fragment of the original. Although not even the most enthusiastic environmentalist would expect the land to remain totally unchanged, the scarcity of sites associated with the expedition is startling. What else could one realistically expect? The wealth of data Lewis and Clark acquired about the vast and mysterious interior represented a challenge as well as a welcome invitation. The invitation rang out loud and clear. And the people came.

Explorers and trappers were the first to come. And following in their tracks came sod busters, miners, homesteaders, shopkeepers, preachers, saloonkeepers and scores of other opportunists—all eager to pluck a fortune or build a new life. In short order, a raw and pulsating wilderness soon became tamed and harnessed by an encroaching civilization. Today, rivers such as the Missouri, Columbia and Yellowstone run rich with the sewage of scores of cities and towns and the run-off of feed lots, stockyards, packing plants and industrial complexes. There are big dams and little dams, levees, artificial reservoirs, riprapped banks, transmission lines, bridges and irrigation pumps. Ribbons of asphalt and concrete, along with wheat fields, generating plants, cities and towns and a thousand other changes now blanket the route once traveled by lumbering masses of buffalo and spirited Indian ponies carrying moccasined warriors.

Americans have exhibited a curious attitude toward the past. On one hand, they have been devoted to growth, expansion, change and new frontiers. At the same time, they have displayed increasing nostalgia and sentimentality toward

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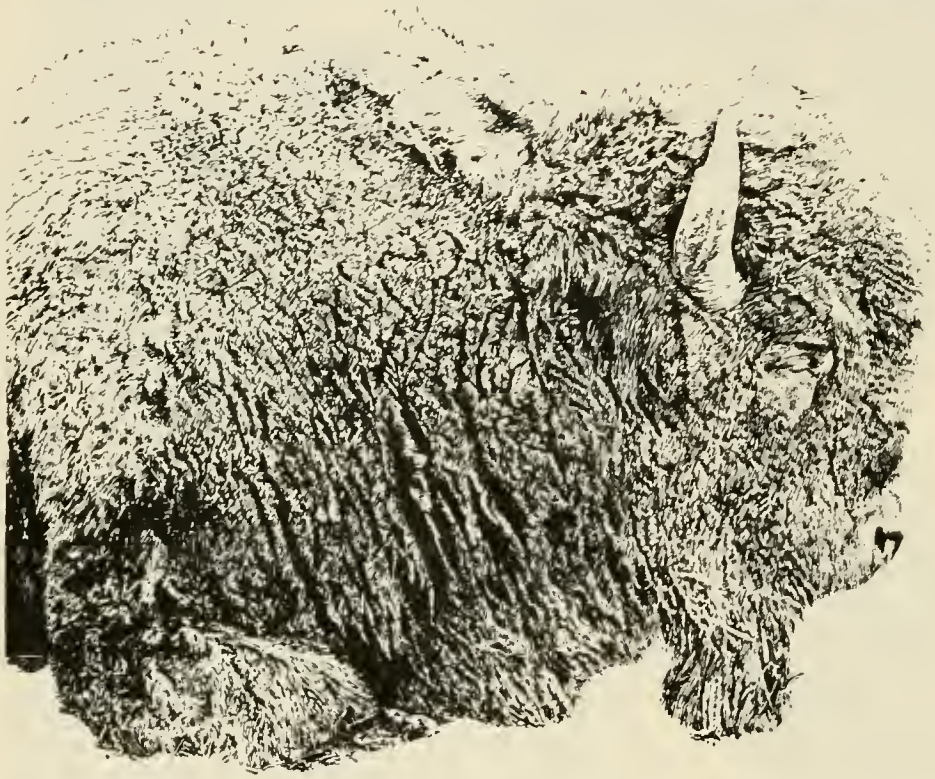
D J NELSON



heir historical past. Anxious to escape the present, Americans are becoming more aware of philosopher George Santayana's famous adage, "Those who do not learn from the past are doomed to repeat it."

The Lewis and Clark Expedition fired a national spirit of adventure which still burns brightly. It flares in our yearning to escape the accelerated pace of today's society. It glows in the satisfaction of a family float trip through a river system unblemished with man's synthetic innovations. It voices an approval of weatherbeaten faces and bodies hardened from a strenuous backpacking trip. The Corps of Discovery and a thousand other frontier excursions have rekindled our instinctive awareness of the future of the past.

For over a century, exploitation of our rich resources has been a dominant trait. In the past, there seemed to be enough room or sufficient resources to compromise differences and console the vanquished. Such comfortable assumptions we had in past decades are now being put to the severest test in 200 years. How long our environmental conscience can survive in the face of scarce economic resources, pressures for "the better things" in life and worldwide demands for resource redistribution will be the principal questions before the tricentennial celebration.

* * * * *

• *In quotes from Lewis' and Clark's journals, their spellings have been retained.*—Ed.

dear F&G

More On Conservation Easements

The future of Montana's wildlife goes hand in hand with our life style. The future of our wild areas and our wildlife depends on how we handle the growing pressures which are put on the land. There is a need for preserving the family farms and ranches which lie between populated and wild areas. By far the greatest threat to endangered species and our big game population is the continued encroachment on their habitat.

Consider the position of the Montana landowner who finds his or her land is desired for development. He or she can sell the land and allow development. For many Montanans, this alternative is unacceptable because it means the land they grew up with will be turned into so many subdivided lots. This pressure would be disastrous for the game habitat found there.

If the farmer or rancher chooses to remain on the land, he or she may find the land zoned at a higher use category, reflecting the demand for this land. With the zoning change comes higher taxes and, if the land is to be passed along, the heirs will be forced to pay a large estate tax. This pressure could force destruction of many family farms and ranches.

Montana has strong legislation to prevent this, yet we hear of the destruction of the productive lands of California and Colorado, which also have strong legislation.

Floodplain zoning, agricultural zoning, tax incentives and subdivision legislation can be combined effectively to protect an area, but sometimes the pressures can be too great.

In 1975, the Montana Legislature adopted H. B. 341, which allows use of conservation easements in Montana. The concept of conservation easements has been well explained in an article in the Sept./Oct. 1975 *Montana Outdoors* Catchall section. The article, written by Gail McDowell, outlines the history, uses and benefits of conservation easements.

Conservation easements involve the collection or rights to the land. Each of these rights may be bought or sold and any others not desired remain with the deed.

When a right to act on the land is considered, it is termed as a "positive" easement. Conservation easements are called "negative" easements because they seek to limit the uses of the land.

Conservation easements can establish what use, or the degree of use, that a parcel of land may be put to. They may not be the final answer in the effort to protect our Montana way of life, but they are tools to do the job.

Easements or other rights on critical game habitat can be sold or donated to state, county and local governmental agencies such as the Bureau of Land Management, Dept. of Fish and Game and Dept. of State Lands.

Qualified conservation organizations can also acquire conservation easements. These organizations include The Nature Conservancy, The Trust for Public Land and Trout Unlimited.

Presently the farmer or rancher has nowhere to turn when he or she wishes to protect the land with an easement. Most organizations have neither the time nor the money to propose easements on land which is not in immediate danger. There is need for establishment of a Montana organization to begin where government agencies and conservation groups leave off.

SPRINGBOARD

"For your information, I am not going to renew my subscription. I was born and raised in Montana and love the state and its people but I just can't stomach such a pro-environmental magazine and I will not support it for that very reason."—*a reply to a* Montana Outdoors *renewal notice*

• FOR DISCUSSION

The lasting beauty of our Montana landscape and the continued management of our wildlife habitat depend on the efforts of organized Montanans. For more information on easements and land conservation, write to any conservation organization. They are listed in the "Conservation Directory," published by the National Wildlife Federation. This publication is found in most public libraries or can be borrowed from local chapters of conservation groups.—*Norm Brown; Missoula, Mont.*

HOW TO ENJOY SHOVELNOSE STURGEON

In the Nov./Dec. 1975 issue, you published an article about shovelnose sturgeon. I believe you will find the following information to be of great help in enjoying the fine, rich meat of sturgeon.

First, cut off the head and fins and clean out the entrails. Next, cut just through the skin at the front of the tail, twist it slightly, then pull the backbone (cartilage) completely out of the body. Each joint will pop out and when completely pulled out, it will resemble a string of soft, white plastic beads.

Next, cut the body into 1- to 1-½-inch steaks. Leave the skin on; after cooking, remove it. Rinse with several changes of cold water and put on paper towels to dry. Sprinkle with salt, pepper, seasoning salt and paprika. Place in a frying pan, on medium heat, with a small amount of butter or quality margarine. Fry about six minutes on each side, or until meat no longer looks clear. Serve with parsley and lemon wedges and enjoy as delicious a meal as one can find.—*Kenneth E. Davis; Forest Lake, Minn.*

FLYING RIGHT

I am an old subscriber to *Montana Outdoors* and enjoy it immensely. Your articles are very informative and keep me posted on environmental problems while I am away.

I found the article on whooping cranes on page 29 of your Jan./Feb. 1976 magazine quite interesting. I didn't know that whooping cranes migrated through Montana and I was a little surprised to know they flew upside down (observe picture). After decisive reasoning, I finally decided they did this for one of three reasons:

(1) They could see Montana's "big sky" much better from this angle.

(2) They had completely lost their migration route and were making it much more challenging to find their wintering grounds flying in this manner.

continued

recycled paper

(3) Maybe a very minor mistake occurred in your photography developing room.

Anyway, it was a great article like so many before it.—*Pelham Monte Turner; APO Seattle, Wash.*

CAUSE FOR REFLECTION

I'd like to congratulate the staff of *Montana Outdoors* for what I believe to be one of the finest publications of its kind in the U.S. I think your department is very progressive, that your policies reflect knowledge and careful attention to your purpose and your policies regarding wildlife and principles of management are very commendable.

My attention has been focused most recently on your articles regarding the wolf and grizzly. I am in complete agreement with your director, Wes Woodgerd, on his stand on federal intervention (Director's Column, May/June 1975). I am also pleased with your concern and attention for the loss of habitat of the grizzly and wolf and for bringing to the attention of your readers the myths and "bad publicity" which has contributed to the demise of these extraordinary animals.

I can appreciate and realize the problems your department faces. It is often depressing to see the land, air, environment and wildlife constantly taking a beating from the big dollar industries—the oil and mining companies, timber industry, big government, greedy politicians and often from an ignorant and unfeeling public which takes and takes today with no concern, respect or care for the next generation. For instance, look at Alaska's "takers"—take the fur seal and leave, take the gold and leave, take the fish until the largest industry is ruined. Now the oil is being taken and soon the "takers" will leave again.

The story is always the same, except this time I think they have done it about for the last time. Eventually I think they will realize it cost them "The Last Wilderness." The environmental destruction they will realize within a few decades will not only deplete the environment and the wildlife, but the native human population and every living thing within that state.

I am asking myself now, will my children be able to make the decision, "How important is a wolf?" or "How important is a grizzly?" What significance do they have in my life? They may not be able to ask this question because maybe my child and his child will never see a wolf or a swan. Maybe my child and his child will never see a wild river as I have seen it. And maybe he won't get good air into his lungs, as I feel that I sometimes get, if I'm in the right spot at the right time.

I feel that you reflect and print the things that I am thinking, that I am feeling, that you feel the same disgust for land developers, subdivisions and for the "takers" who don't give anything. The disgust extends to the Corps of Engineers who, out of sheer boredom and the need to justify its existence, feels the need to build a hydroelectric dam or ruin a good river, a stream or anything it condemns, with little or no attention to fisheries or history. It doesn't consider the living things in the area that depend on the river for life. To it, the most senseless reason of all is because it's natural, it has beauty, it's pleasant to spend time there, to see, to be.

What I've been trying to say is that I care. And from what I've read, you care. Your publication cares and your department cares. I appreciate the fine jobs your department and your publication are doing.—*John Theode; Spokane, Wash.*

Missouri Shows Montana

A "concerned outsider" would like to comment on "Private Forestry" which appeared in the March/April 1976 issue. The state of Missouri has established incentives for intelligent management of private forest lands which I challenge any state to match.

Missouri's deer herd was a pittance, its wild turkeys on the endangered species list, its clear streams filling in with gravel and a group of concerned sportsmen—that is another name for "conservationists"—got a nonpartisan Fish and Game Commission established. These farsighted individuals recognized that the deer population, turkey survival and preservation of clear, flowing, nonsilted streams was dependent on adequate forest cover in our rocky Ozark Mountains.

They convinced the legislature to pass laws which encouraged good timber practices. These laws have the following essential qualities:

(1) The landowner requests his timberland be classified as "timber crop" by the State Conservation Commission.

(2) The tract must remain as timber for 20 years.

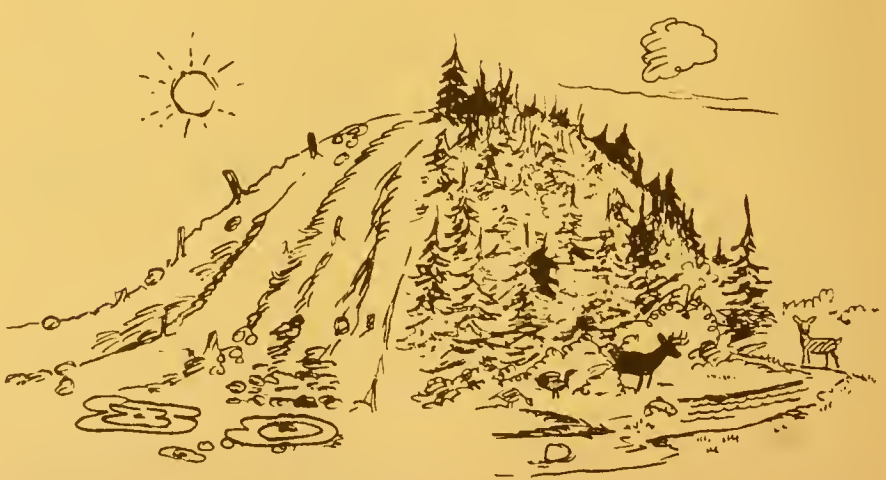
(3) Cutting is not allowed during this period unless approved by the state forester, and then in a manner approved by him. The forester will supply a competent contractor to harvest the timber.

(4) The state forester will supervise the timber tract and protect it from timber theft and fire and will give advice as to timber stand improvement.

(5) The timber cropland is assessed at $2 per acre during the 20-year period that a timber stand is being established.

(6) The state compensates the county government during this 20-year period for lost tax revenues.

(7) When timber is mature and harvested, a severance tax is assessed against the purchased timber in lieu of deferred taxes.



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(8) If the owner of the tract defaults on his 20-year agreement for timber stand management, he must pay back taxes and a penalty for the default.

With this farseeing legislation, Missouri's deer herd is booming, turkeys are abundant and ruffed grouse—once native, then extinct—have been reintroduced and are thriving. Spring fed streams are clear and flowing *and* we have a good timber industry.

Montana should think ahead. You are not at the low point at which Missouri once was—but you can make it if you don't watch out.—*George L. Hawkins, Jr.; Webster Groves, Mo.*

THE TREASURE STATE

Last Christmas we were fortunate to receive a subscription to your magazine. It is wonderful, to say the least. I really do enjoy the articles and pictures.

Every time I see a Montana license plate with the "Big Sky Country" slogan, it irritates me. Any state in the Union, particularly the western states could be called "Big Sky Country"—but one and only one, Montana, can truly be called the name that used to appear on the plates, "The Treasure State." Only Montana, of all our 50 states, has a city (Butte) built on the richest hill on earth—hence the name "Treasure State."

Therefore, I hope you will print the following poem I composed:

"Montana"

M—agnificent rivers flowing wild and wide
O—re-laden mountains with treasures inside
N—ever-to-be-forgotten, breath-taking scenery
T—rees and shrubs, all kinds of greenery
A—ll the outdoor sports and games you love
N—eath the blue of heaven above
A—ll of these make Montana
The Treasure State.

I would like to have you use whatever influence you have to get the slogan changed to the one it was first.—*Mrs. M.A. Switzer; Kalispell, Mont.*

•*The license plate slogan was changed from "The Treasure State" to "Big Sky Country" in 1967. This year, it was shortened to "Big Sky."*—Ed.

WEED OUT THE SLOBS

I'm very concerned about the emotional and misunderstood hunting and anti-hunting views that seem to be flying around the air quite thickly these days. Unless someone has actually hunted or observed hunting, I would advise him to keep an open mind. I would like to be able to keep a pro-hunting attitude, but unfortunately, I need more assurance from hunters themselves that they are competent, knowledgeable of species and careful of the environment.

I would be the first person to encourage true sportsmanlike hunting—it brings a far more romantic picture to my mind than cattle, pigs, etc., stuffed end to end in the slaughterhouse, waiting for death.

But I feel an exam should be required before a license is issued. This exam would be short and to the point, testing knowledge of separate species and important hunting attitudes, such as those toward predators and their role in the environment. I feel that before a hunter goes out shooting, he should know the difference between a merganser, a grebe and a mallard—if not in flight, then in the hand.

While checking bags in Michigan one day (where I received my B.S. in conservation), we were actually shown a trunkful of mergansers—the hunter had thought they were grebes. I know this kind of thing goes on everywhere.

Actually the hunter's only enemy is himself or herself. Once hunters establish the fact that they are responsible and knowledgeable and can weed out the slobs from amongst themselves, there will no longer be any legitimate gripe against them.—*Karen Powell; Bozeman, Mont.*

A WONDERFUL GIFT

I came to Montana in 1910 from North Dakota. To me, it was the most wonderful place to live because I love the great outdoors. Our history book was "The Land of the Shining Mountains." It taught us to respect our first Americans. I was 9 years old then and I loved to pick the wildflowers and roam the hills. My Dad was a blacksmith and later took the job of ferryman across the Missouri River at Virgelle where we spent our vacations when school was out.

We moved to the Flathead Valley in 1922 to make our home—which it still is. At that time there were only two cherry orchards, four apple orchards and some peach trees. Some froze out, more cherries were planted on both sides of the lake and now we have the nation's finest sweet cherries.

I was thrilled when I saw my first copy of *Montana Outdoors*. It makes a wonderful gift for families who live out of the state because its beauty is all there in reading and pictures to enjoy. I have loaned mine to neighbors who have sent in subscriptions for themselves, too.—*Mrs. Rose Chappel, East Lake Shore; Bigfork, Mont.*

IS MONTANA HUNTING FOR RICH NONRESIDENTS?

It is with regret I return the hunting license application you so kindly sent me. It is with much regret that I read of the requirements to hunt deer in Montana this year for an out-of-state citizen like myself.

Ever since I lived in Montana, I have loved the state. I liked its big country. I liked its friendly and honest people. I liked the way it felt like a sort of "last frontier" of our country, standing boldly for its great outdoors as God's gift to be enjoyed freely by all mankind—the kind of thing our founding fathers were seeking when they left their homeland to start a country which was to become known as the "land of the free and the home of the brave."

However, the changes made in Montana's approach to hunting by those who are fellow men but not state residents, I find exactly opposite from the above impression I have had of the state.

I can understand paying $35 to hunt deer. I realize management costs money and without it there would be no game. I also realize that with under one million persons living in the whole state of Montana, those of us who do not live in the state have to help with these expenses. I have also been expecting for some time to see the license fee for deer go up to $50. That has been the fee in surrounding states for some time. However, I am appalled at the cheap trick played on us out-of-state sportsmen by forcing us to buy an expensive combination bird and fishing license just to "chance" a drawing at a deer license which will cost us another $50 if we are lucky enough to get the license. In any case, you have our unearned $50 free and clear to keep for yourselves. It is obvious that this is no more than a shady trick to try to get out-of-state sportsmen to finance your game program without being able to enjoy its benefits.

The other thing about the licenses this year that I find an unpleasant surprise is the provision for out-of-state hunters that they may only shoot antlered bucks. During all my years in Montana and in talking with game men of Montana, the big complaint was, "Hunters ought to shoot more does. They only want to shoot bucks and this unbalances the herds." Now you make a rule against the very thing you have

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for years been advocating. I don't understand this at all.

I realize also that every year more of us from other states come to Montana to hunt deer. Perhaps too many of us come. However, I think it shameful that you should regulate this by making it possible for only the wealthy to enjoy hunting in your state. You could have thinned down the number of hunters by allowing only one permit every several years for an individual hunter, as you have done for your residents on moose. But at the same time you don't want so many hunters, you also want more money. So accordingly, you have adopted regulations which allow you to take the sportsman's money and still not allow him to hunt.

I think it a real shame that you people in Montana, few as you are, should have such an uncharitable attitude toward those of us from other states who are willing to take part of our vacation and buy a lot of gasoline just to enjoy for a week what you can enjoy all year long. One third of your land belongs to all of us. We have allowed you to govern that land because you did a good job and treated us fairly. However, after seeing your attitude toward us using our land and its resources, I'm afraid that I will have to support federal control of the use of that land.

You begrudge us a few weeks a year in your wide-open spaces, yet you ask us through your magazine and through articles in other magazines to help you to preserve this wonderful country you don't want to share with us. We don't have wide-open country here in Wisconsin. And the city of Chicago includes more than five times the entire population of your whole expansive state. If you make that space something we can all enjoy, we may be willing to live in our crowded areas and support your outdoors for the short time we can enjoy it. However, if you are going to be selfish and try to fleece us and use our land to take our money, perhaps the day will come when people will move into your state the way they have into Wisconsin and Illinois. Then the outdoors you are selfishly trying to keep for yourselves will no longer be there for you or us—and you will have your own selfishness to thank for it.

I know many fine folks in Montana. They work hard, they're honest and they're dear to my heart. I also know people like that in Wisconsin. They work hard but they don't get rich. Many of them are fine people and good, safe hunters—the kind, I feel, who deserve to be able to hunt Montana deer a few times in their lives. However, thanks to your new approach to the out-of-state hunter, most of these people will never be able to do it. They don't have $50 to "gamble" on possibly getting a license for a deer. They have families to support and mouths to feed.

I find rather sad irony in the fact that Montana has chosen 1976, our nation's bicentennial, to declare through its regulations that hunting is no longer a sport for anyone who loves the great outdoors as our forefathers meant it to be. You have declared it a rich man's recreation, as it was in the countries our forefathers came here to get away from.

Enclosed please find the application for a license for Montana. It makes me sick to look at it. I am a sportsman, not a gambler, and I can no longer afford your "rich man's recreation." Have fun on my share of your federal land, but don't expect me to help you preserve it, because you have robbed me of it.—*William F. Spicer; Friendship, Wis.*

• *Mr. Spicer is referring to part of the department's new license structure. To obtain a deer tag, a nonresident may buy either a $225 combination license, which allows deer, elk, black bear and game bird hunting, plus fishing, or a $50 prerequisite license which allows fishing and game bird hunting. If he buys the $50 prerequisite license, he must submit $50 more to be eligible for the drawing on special deer permits. If he is unsuccessful in this drawing, he gets back the $50 he submitted for a chance in the drawing, but he does* not *get back the $50 he paid for the game bird and fishing license. Mr. Spicer is bitter about* not *receiving this $50 back because apparently he wanted to hunt only deer and did not want to hunt game birds or go fishing.*

SPEAK FROM FACTS

I am writing in reaction to a letter in the Jan./Feb. 1976 issue by Brian Heath. After reading this very emotional statement of misfacts, I felt compelled to write this rebuttal.

It is obvious that Heath has no wildlife management or biological background and little knowledge of population dynamics.

It is a fact that elk can cause habitat change due to succession. Now whether this is good or bad has to be determined by the eye of the beholder. Another point that was brought out was the thought that starving to death is no better than being gut shot. Actually this is completely relative and I am sure that not all animals are gut shot and the majority of the deaths couldn't be as awful as starving. This is not the point; one must make the determination of what is waste. Is it waste for a hunter to take the animal's flesh home for consumption or is it waste for the carcass to rot? Of course, everyone knows that in a biological system nothing goes to waste. It is utilized by something. I think this question can be answered by easy deduction.

Another statement was made about evolution of animals. I am amazed that anyone can relate shooting surplus animals with the ability to evolve toward a greater fat-building ability, and then associate that with the possibility of our children not having the opportunity to have wild elk to hunt.

The statement that "chance" may bring the right things together—including weak, starving elk—so that cougars or wolves may again become abundant is purely emotional. If we had to depend on chance for scientific knowledge, we would still be back in the Stone Age.

As for letting density-dependent mortality take over the elk herd—that's simply going back to the first consideration: Are you going to utilize the excess animals over the carrying capacity or are you going to chalk them up to starvation? I think that most logical people would choose to utilize the resource.

I realize there is a time and place for us to leave a population alone, but I believe that should be left up to knowledgeable wildlife management biologists.

I also personally see no correlation between abstaining from management and having animals around for our children. I suggest Heath try reading a book like "Ecology" by Robert E. Ricklefs or taking a few classes in wildlife management. I believe he would not make such statements. Perhaps he might learn about plant and animal succession, population dynamics and other related subjects. Next time, Mr. Heath, speak from factual knowledge and not from emotions.—*Kenneth E. Mayer, senior, natural resources, California State University; Humboldt, Calif.*

RIGHT TO THE HEART

Your March/April 1976 issue arrived today. Both the outside and the inside are of unsurpassing beauty. Chief Seattle's words and the pictures that surround them go right to the heart of an old man who has loved the smallest items to the largest in nature from his

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preschool days.—*Eli B. Christensen; Philipsburg, Mont.*

WISHING WON'T GET IT DONE

Bravo for your piece on Wolf Creek (March/April 1976) and other ill-planned subdivisions. I get so sick when I hear the word subdivision. Here in the Flathead, things have been subdivided so long, there's no clear-cut town or country.

I admire your policies on land development but I need a piece of advice—how can I (other than buying the land myself, which I can't) stop or control the land developers? I know there are lots of organizations, but each seems devoted to its own area. Is there a Montana statewide group? Are there enough readers interested to start petitions to force state laws to put strict controls on *all* land purchases. To Jerry Brooking in Great Falls, who wrote a thought-provoking letter in the March/April issue, shall we start one? Come on—sitting and wishing something will get done doesn't do it.—*Joyce Marsh; Polson, Mont.*

• *The Environmental Information Center (Box 12; Helena, MT 59601) is the only statewide organization seriously involved in trying to attain proper control of rural subdivision. We suggest you contact this citizens group with your views.*—Ed.

WILDLIFE LOSES MORE THAN THE REST

I would like to reply to the letter from the biology student, Jim Banks, in your Jan./Feb. 1976 issue.

I wonder if Banks is planning on using his education to enter some field of wildlife management. If so, he should stop and seriously consider the full impact of his position against hunting. The harder he works against hunting, the harder he will be working to put himself and ultimately every person connected with wildlife out of a job.

There are three ways the course of wildlife management can go in the U.S.:

(1) We can continue with the past *proved* method of a controlled harvest of surplus animals—sport hunting.

(2) We can let nature take her course and watch the surplus die of starvation.

(3) We can spend millions of dollars hiring an army of marksmen or trappers to harvest the surplus.

Banks quoted Joseph Wood Krutch about the destruction of a work of God. I don't consider harvesting the surplus animals in the wild any more destructive than getting a steak at the local market. Wildlife was affected the day white man set foot on this continent. The men of that era elected to kill off the competition for "their" deer by getting rid of predators. This has been going on for hundreds of years. It has reached the point now where game is managed like a crop. There is no return to the days of old; they were long ago and far away. God gave us these animals to use and harvesting the surplus is a good use—far better than letting them starve and rot.

The second choice might sound reasonable to one who has never seen an animal starve or the havoc upon the land they wreak before they die. The destruction of the rangeland due to overgrazing of the animals takes years to restore. In the meantime, nothing productive comes from it. Wildlife would be diminished to the point where nobody would get any benefit from it. Hunters would not be able to enjoy their pastime; hikers, bird watchers, campers or fishermen wouldn't be able to catch a glimpse of a deer or elk slipping through the brush. Of course, the fishermen probably wouldn't be

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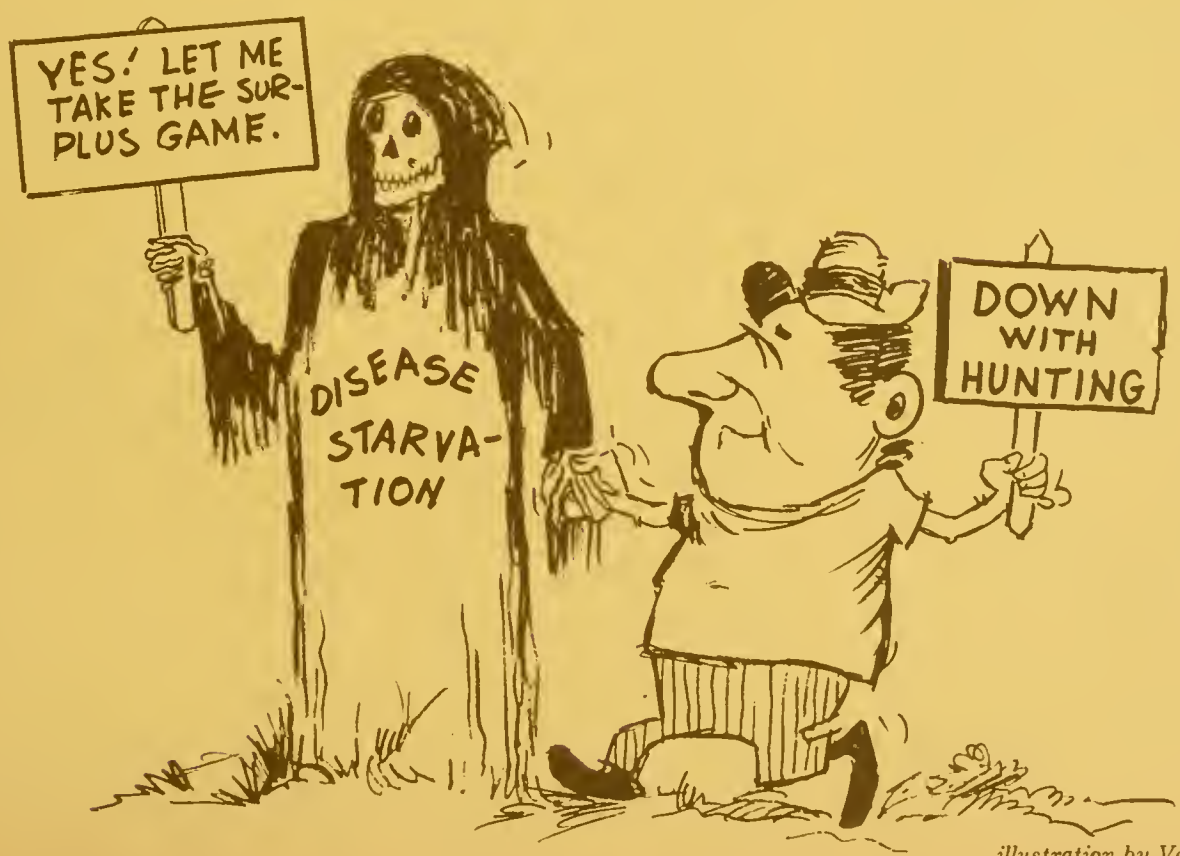

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there because the streams would be silted beyond the limit for fish to survive because of the excessive runoff due to destruction of the hillsides.

One might imagine the reintroduction of predators as a control of game herds. If there were an all-out effort to relocate wolves and mountain lions to areas needing control, it would fall far short of being adequate. Starvation would take over long before the predators. There are not enough predators in the U.S. to do the job.

Another point to consider is that ranchers would be calling for all-out destruction of game because of the damage to their cattle range. That is big business and if you think hunters are screaming now, imagine what the cattle and sheep industry would do.

The third choice might seem too ridiculous to even consider but we must, for the benefit of equal time. We the people might give in to emotions and the screams of ranchers and agree to control animal herds by use of hired hunters. But here again we run into problems: Who picks them—the President, the governor? Whoever does will have a monumental task, picking out a number of men to do the job that 20 million American sportsmen are doing now. A second problem: Who funds this operation? You and I do, out of our pockets. Now we've turned an operation from one that generates revenues of millions into one which will cost more millions, probably *many* more millions knowing the government's record of running things. When the operation becomes too big and costs too much, the taxpayers will start yelling louder than the hunters and anti-hunters and we will revert to one of our earlier choices—the one in which the animals starve.

If Banks would stop and consider the mood of the average citizen of the U.S., I think he would realize how destructive to wildlife this anti-hunting movement is :

(1) The taxpayers are not going to allocate large sums of money for animal control.

(2) They are not going to contribute money for restoration projects.

(3) They are not going to contribute time and energy to go out and create suitable habitat, i.e., cutting browse and planting food.

(4) They are not going to push for more wilderness areas. The average person does not even know what one is, nor has he hiked or camped in one. Most people don't know and they don't care.

(5) A few anti-hunters are talking big now, but in the long run, support will evaporate.

Hunters are the main line of defense for animals, with money, time and energy spent in the woods and with letters sent to government officials concerning laws affecting wildlife and the land. We've proved that with our efforts. Just review the past 60 years.

As you can see, taking the hunters out of the woods will ultimately take the animals out and so go the jobs in wildlife management. No one will win in the long run on this issue, but there will be one who loses more than the rest—wildlife.— *J.T. Maxwell II; Destin, Fla.*

PROPHETIC WORDS

As a former student of anthropology and a professional conservationist, I was doubly impressed with your version of Chief Seattle's famous oration and the accompanying photo essay in the March/April 1976 issue.

Chief Seattle's message is certainly timely and, unfortunately, all too prophetic. Your excellent graphics provided a very appropriate background.—*Roger Kelley Brown; Evergreen, Colo.*

SHOOTING PRAIRIE DOGS ISN'T SPORT HUNTING

I am amazed that your department would present such a distorted view of what a "sportsman" (sportsperson) is. Your oft-quoted Aldo Leopold would turn in his grave.

I refer specifically to your article on the black-footed ferret (Jan./Feb. 1976), where you promote the "sport shooting" of prairie dogs, touting it as an opportunity for "off-season hunting activity" and a chance to "sharpen their shooting skills."

You fellows (and ladies) have the sensitivity of a box of rocks. Surely your offices are located underground, sealed off from contact with the general populace, cut off from the media. If not, you'd realize that most people are against such "sport killing."

I am a hunter and I heartily resent your insinuation that shooting prairie dogs (or ground squirrels, magpies, frogs, etc.) is either sport or hunting. Clearly, such recreation is nothing but legalized killing, perhaps understandable for young boys or mental lightweights, but never for sportspersons.

Specifically, does your department support the killing of animals whose pelts or meat cannot be utilized?—*Carol Hagmann; Hamilton, Mont.*

• *Yes, the department supports the sport shooting of prairie dogs even though the pelts or meat are not used.*

Shooting may put off a landowner's desire to poison the entire prairie dog town. Through shooting, it is almost impossible to wipe out a prairie dog town. And, dogs that are shot generally die instantly. On the other hand, poisoning results in the elimination of entire towns and death may not come instantly.

When poison enters the picture, the prairie dog is not the only species to suffer. The black-footed ferret is another, as well as the burrowing owl, mountain plover, golden eagle and other species which take some of their food or shelter from prairie dog towns.

A stand against shooting prairie dogs may lend tacit approval to widespread poisoning campaigns which often cause the kind of ecological havoc we work to avoid.

Finally, we feel shooting prairie dogs is an acceptable form of outdoor recreation.—Ed.

THE RAPE OF THE GREAT PLAINS, by K. Ross Toole; Little, Brown and Co.; Boston, Mass., 1976, 271 pages, $8.95.

The title is misleading. This book is about southeastern Montana. It's about that area's black gold and the drive to get it. It's recent Montana history, written by a Montana historian, with all the classic Montana characters—cowboys, Indians, prospectors, revenue men. It has its share of hustlers and rustlers, a band of bureaucrats, bankers and barons and even a handful of heroes. It's about silver sage, endless grass, wild animals, clear water and a big, clean sky. The whole thing is sprinkled with dust and dreams and a dash of hope.

This western tale needs telling and we should be thankful we had an experienced hand to do it. Montana's coal story grows by the inch and pound every week as over a hundred outfits trade impact statements, research findings, hearing records, legal briefs, news articles, planning reports, paisley maps and three-page letters. It gets so one wonders if it's possible to get a mind around it all. Clearly someone had to put a rope around the bulk of it, pull it in, cull the chaff, distill down the rest and put it on paper. Well, this is it; it is interesting and while you may not enjoy it all, you're sure to learn some-

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thing. It gives the interested reader, whether he is new to the coal issue or not, a chance to come on line, to size up and appreciate the struggle.

While the details of the coal story are complex, Toole's approach is simple. He starts with 125 pages about the people involved and their views; next are 67 pages on the land and its limits and he concludes with 53 pages on the issue's hard questions and the values being weighed. It is not an objective study. It's full of the author's perception of history's lessons, his sensitivity to the natural land and his bias for Montana's quantity of life and quality of living.

The book questions the trades that are being proposed, the irreversible results, the dubious benefits, the lack of candor, the lack of planning, the lack of any long-range goals. It exposes the "low sulfur myth," the "reclamation myth," the playdown of development's social impact and the current oil and coal companies' TV and magazine "patriotism approach." It poses some poignant questions. Is the stripping of coal and the mine mouth production of tremendous amounts of power in Montana necessary? Will the 30- or 40-year scramble to rip open eastern Montana genuinely alleviate our pains until alternate energy sources are developed? Who is pushing Montana coal development and why?

Early on, the author stated his book had no real ending. The whole Montana energy scene is in a fantastic state of flux. While this book was being printed, the Federal Energy Administration was drawing up a four-volume energy happening for the Glasgow Air Force Base, the Burlington Northern Co. was working on a plan for gasification plants in McCone County near Fort Peck Reservoir, promoters were working on plans to develop coal near Havre and just across the border upstream and upwind from northeastern Montana, the Saskatchewan Power Corp. was constructing a reservoir and laying the initial footings for what might become the largest coal development in Canada. While no one project will ruin a state, collectively these efforts will surely change the place.

Article 9, Section 1, Paragraph 1 of Montana's new constitution says: "The state and each person shall maintain and improve a clean and healthful environment in Montana for present and future generations." Paragraph 3 in the same section says: "The legislature shall provide adequate remedies for the protection of the environmental life-support system from degradation and provide adequate remedies to prevent unreasonable depletion and degradation of natural resources...." What does this mean in terms of Montana's coal development? Will Montana be equal to this challenge?

There is a message in this book for the whole country and that's probably why the publishers laid on the "battle book" title. For Montanans, these are words about home. If you don't want to buy this book, ask for it at your local library. They'll have it and Prof. Toole won't mind.—*Mike Aderhold*

THE SNOWSHOE BOOK, second edition, by William Osgood and Leslie Hurley, The Stephen Greene Press; Brattleboro, Vt., 1975, 164 pages, $7.95 hardback, $4.50 paper.

The official record for the 100-yard dash on snowshoes is 12.1 seconds. With the facts from this new edition, you are finally prepared for your own dash over that formerly troublesome fluffy stuff.

The first edition in 1971 was timely for winter sport and recreation enthusiasts since it clued the stranded snowmobiler to mobility when his machine failed and it interested the non-snowmobiler who wanted an alternative to skiing: On snowshoes you are never out of gas and seldom out of control. The chapter, "Binding Basics," described the simple, safe and convenient ways of connecting the foot to the snowshoe and explained how to make and mend a proper binding. But it avoided tips on actual construction of a snowshoe by the user, except for cursory examples of snowshoes improvised in emergency situations. Critics disclaimed its consumer orientation—it told you how to buy but not how to build.

The second edition stifles the critics and satisfies everyone with a whole new chapter, "Making Your Own," which contains over 30 fact-packed, well-illustrated pages on how to build. It tells you everything except where to plant the white ash for the frames and how to lasso the steer for the rawhide webbing. It's the latest, best word on a way of travel nearly 6,000 years old.—*Aaron R. Spurway*

THIS LIVING EARTH, by David Cavagnaro, American West Publishing Co.; Palo Alto, Calif., 1972, 191 pages, $17.50.

This book provides an interesting combination of creative artistry, biological information and human wisdom. The book is a brief but meaningful review of a young couple's three-year "close look" at a small piece of grassland. The experience extended their knowledge, stretched their senses and expanded their spirit. This book will do the same for you.

The beautifully illustrated, finely printed work is divided into three levels of appreciation. Initially there is an *awakening*—a simple, primitive awareness of the living earth. As the senses are refined, the smell of damp earth, the sound of an owl and the sight of countless new forms of life accent a thrilling and exciting period of *discovery*. Last, the strands of discovered knowledge are eventually woven into a fabric of *understanding* which gives meaning to the study effort, the experience and life itself.

The writing—as good as it is—is dominated by 114 imaginative, excellently framed and reproduced photos accompanied by poignant passages from the text. Most of these photographs were taken with a micro lens capable of studying a butterfly's wing, admiring a flower head, featuring a milkweed seed and noticing light refraction in a blade of frost and a drop of water. For those interested, five pages of photo notes are included on what camera equipment was used and how the shot was taken.

After reading the story and looking at the pictures, one can appreciate why true reclamation of disturbed grassland is so difficult. How can anyone re-establish a complex environment involving billions of organisms, hundreds of life forms, thousands of years of development and millions of interactions?

Grass dominates Montana's vegetation, especially in the eastern portion of the state. Native grasslands are the foundation of this state's livestock industry; they support most of Montana's wildlife and many of its people. Good books explaining and examining this valuable resource are needed. "This Living Earth" is the best to date. It's easy to read, nice to display and a perfect family gift.—*Mike Aderhold*

THE TROUT AND THE STREAM, by Charles E. Brooks, Crown Publishers, Inc., New York, 1974, 216 pages, $7.95.

"The Trout and the Stream" has special appeal for Montana fishermen. The author, Charles Brooks, lived at West Yellowstone, Mont., for nine years before he wrote this book on streams, trout and other stream life of the area. He had sport fished 40 years or so, including 15 years learning nymph fishing. He spends an astounding 100 days a year on the water and "...a good many hours on the stream bottom [with a face mask] studying what goes on down there." He teaches

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classes and gives demonstrations on trout fishing.

The book does not condemn any sport method of fishing but, as Brooks says, he enjoys fly fishing more than any other style and is "a wet fly man, devout and unabashed."

I do not agree with everything he said on trout streams and trout but, all in all, the book is loaded with good information. The chapter, "Knowing Your Rivers," gives detailed descriptions of the trout fishing potential of (1) the Yellowstone River from Fishing Bridge to Gardiner, (2) the Firehole River in its entirety, (3) the upper Madison River in Yellowstone National Park, from its start at Madison Junction to Baker's Hole, (4) the lower Madison from Quake Lake to Ennis, (5) the entire South Fork of the Madison River, (6) the Gallatin River from Fan Creek to the mouth of the canyon and (7) Henry's Fork of the Snake River from its source to just below Osborn Bridge.

In the chapter on "Fishing the Water," Brooks writes, "The important things learned should be that the right kind of line for each type of water is a must, that position to start fishing must be chosen with care, and that thorough coverage of the hold is necessary. We also should know that a different fishing style is required for different types of water, and that we should know something of the insects in the water, their size, shape, and color, and hopefully, something of their activities. If we know this much, then we know that fishing the water is not really a chuck-and-chance-it affair." "The Trout and the Stream" teaches these skills, particularly as they apply to streams of southwestern Montana and the adjoining area. Brooks is an outstanding writer-teacher.

The book contains well-illustrated sections on the requirements and behavior of trout and aquatic insects of the area. There are construction details and drawings of over 20 fly patterns Brooks uses most, a separate chapter on tackle and gear and several chapters on aesthetics and conservation.

In the introduction, Brooks said he"...tried to make this book simple, without making it simplistic." He succeeded. The book is easily read, interesting, informative and beautifully illustrated. It gives new insight into trout streams and trout fishing. —*George D. Holton*

KNIVES AND KNIFEMAKERS, by Sid Latham, Winchester Press; New York, NY, 1973, 152 pages, $15.

The knife has been a basic tool of man ever since one of our ancestors put an edge on a piece of stone. In most western countries, nearly every adult uses some kind of knife every day. To one spending much time outdoors, a knife is a necessity. Most knives used today are commercially mass produced and the quality runs from bad to excellent, with the average in the "good" range. The very best knives are high quality bench-made knives that reflect the heart and creative skills of a single experienced craftsman. These handcrafted blades and their makers are the subject of this book.

Sid Latham is an experienced outdoor writer and photographer whose considerable talents have produced in two years what must be the finest book on this subject ever written. The work contains 67 photos of 312 beautifully displayed, finely crafted knives. There is a 21-page chapter on different steels with a discussion of knifemaking techniques and 14 photos illustrating how a fine knife is cut, ground and polished. The book includes 11 pages on knife care with 13 photos on proper sharpening technique. There are six pictures of different quality features and a 19-page chapter on factors to consider in selecting, ordering or designing a knife for yourself.

Other sections discuss special purpose designs, exotic handle materials, throwing knives, sheaths, custom decoration and knife collecting. Most interesting to me were the many references to the knifemakers, comments about their backgrounds and their personal feelings and philosophies about their craft. The book also contains a good recent history of the art form.

Six Montana knifemakers are mentioned in the book. Rudy Ruana and his son-in-law, Vic Hangas of Bonner, are mentioned in a chapter on the Bowie knife. Ruana is recognized as one of the pioneers who kept the craft alive during less popular times. Henry Frank of Whitefish is a gun engraver turned knifesmith whose very fine detailed scroll work is shown on six pieces in a section on folding knives. Louie Lienemann of Billings made one of the most attractive blades shown in the book, a utility knife with a zebrawood handle. Don Pfrimmer of Whitefish is mentioned in the text and Robert Gess of Wolf Point is listed in the book's appendix, which includes the names and addresses of 100 other established knifesmiths.

Back in the mid-1960s, while a student working out of Missoula on a bighorn sheep study, I found a massive set of elk antlers. The bone had good color and interesting texture—what an artist would call character. When I left the area, I traded the antlers to Rudy Ruana for a medium-sized Bowie knife. The blade also had character. It was skillfully made, had a unique style and a little of an interesting man's pride. During the five years I was out of the state, the knife never failed to remind me of Montana, good friends, good times and good country. The knife was well worth the best set of antlers I ever saw and this is part of the reason why a growing number of people are investing $100 or more in a bench-made knife. Interesting enough for a novice, detailed enough for an expert, this book will satisfy anyone with an appreciation for fine goods.—*Mike Aderhold*

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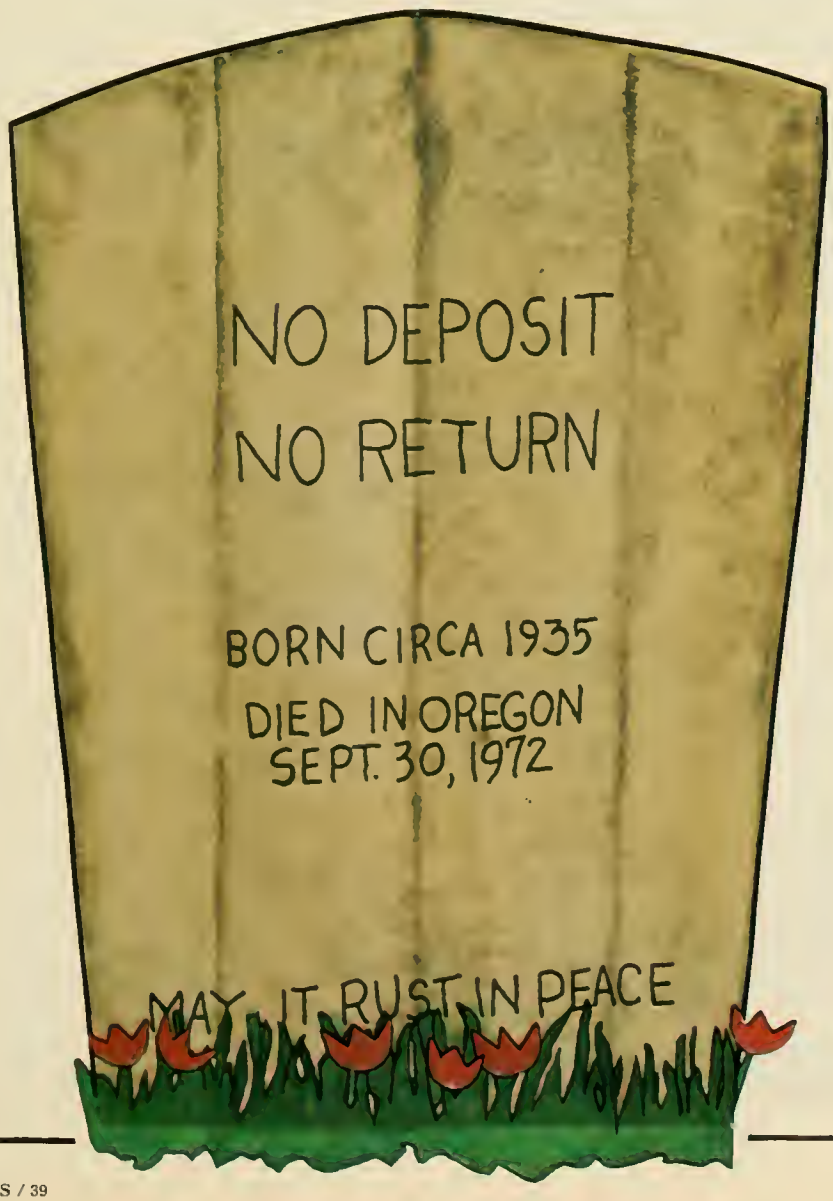
THE GREAT CONTAINER CONTROVERSY

small deposit, large return

by Bill Schneider

illustration by Donita Sexton



THE GREAT CONTAINER CONTROVERSY

A new concept that conserves tremendous amounts of energy and natural resources, reduces litter, protects thousands of acres of wildlife habitat, creates jobs, helps keep land open to hunting and fishing, saves consumers and industries money and has little, if any, long-term impact on the economy *should* enjoy an easy ride to reality. But when the concept requires a fundamental change in American life styles and a short-term restructuring of industrial logic, the ride is definitely *not* easy.

So it is with vital legislation banning nonreturnable/nonrefillable beverage containers. Everything about the famed "bottle bill" seems basically appealing. But several industries have put forth supreme efforts to block it.

Faced with resource shortages, an energy crisis, a proliferating litter problem, increased posting of private land and disappearing wildlife habitat, it seems totally appropriate to start *reusing* beverage containers. Nationwide, it would mean nine million tons of trash (mostly basic resources) the country could *reuse* each year. This is unquestionably better than digging up thousands of acres to extract these resources year after year. And, according to former Oregon Gov. Tom McCall, a national bottle bill would annually save the equivalent of energy used by nine millon people in New England.

It would also help clean up America's roadsides, trails, beaches, parks, streams and lakes which too frequently are littered with beer cans or broken bottles. Indeed, it would be nearly impossible to find anyone who isn't against this "trashing up" of America.

However, breweries, glass and can manufacturers, aluminum processers, supermarket chains and soft drink companies prefer to continue producing and distributing *60 billion to 80 billion* throwaway beverage containers *every year. That's about one throwaway per day, year round, for every U.S. citizen*—many of which end up in landfills, along highways and wilderness trails, in lakes and streams and on beaches or other recreational areas.

The container controversy first reared its head when the Oregon Legislature approved the nation's first bottle bill. Although there were environmental overtones, the basic force behind the bill was litter reduction.

McCall flatly states that lobbyists "...worked against that bill more ferociously than any lobby we have ever had in this state." Nonetheless, it passed.

Basically, Oregon's bottle bill contains these provisions:

- Carbonated beverages (beer and pop) can't be sold in nonreturnable cans or bottles.
- The container must be clearly marked with the deposit value (i.e., five cents).
- A basic deposit value of five cents per container was imposed.
- A two-cent deposit was allowed on some "certified" bottles that conformed to a standard size and shape. These can be collected and reused by several companies, thus simplifying the entire storage and handling process.
- Removable, metal ring, "pull-tabs" on cans were banned.
- All retail dealers must refund deposits (marked on the containers) to anyone presenting empty beverage containers (bottles and cans) of the kind, size and brand they sell and for "certified" bottles even if they don't sell that brand.
- All distributors must collect returnable bottles and cans from retail dealers and pay them the amount marked on the container.

"...It [the bottle bill] will prevail eventually because it's a great energy and material saver," McCall explains. "It saves consumers money. It makes the brewers and bottlers a little more. It cleans up litter....It cuts down on litter pick up costs. And on top of all that, it creates jobs."

But the opposition doesn't quite see it that way. Critics claim it will increase unemployment, rob consumers of their freedom of choice, become an "economic disaster" and have, in general, a catastrophic impact on an industry too deeply committed to the throwaway system.

Since Oregon approved this new concept in 1971, hundreds of similar bills have been introduced in almost every state and many localities. However, only three states—Oregon, Vermont and South Dakota—and a few communities have bottle bills. All other such bills were successfully beaten back by industry lobbyists. Also, many of those that passed were tied up in the courts.

the convenience of buying throwaways costs us more than $1.75 a six-pack

The Adolph Coors Co. of Golden, Colo. has been a major defector among industry ranks. Coors

voluntarily started its own deposit and recycling system which has been quite successful. Apparently, other breweries won't follow this lead as William Coors estimates $20 million will be spent this year to defeat container legislation. Obviously, the opposition is digging in its heels for a bitter battle to the end.

Briefly, the debate narrows to these basic points:

Energy—Opponents downplay energy savings, suggesting they will be minimal and hardly worth this drastic action. However, the facts prove otherwise.

Researchers in New York found the bottle bill would save, in this one state, enough energy to heat at least 125,000 homes and run more than 200,000 automobiles. Colorado researchers likewise estimated enough savings to heat 40,000 homes per year. Dr. Carlos Stern, who teaches economics at the University of Connecticut, studied the situation and concluded, "If the nation would go to a national bottle bill and to reusable containers by 1980, the annual savings in energy would equal the output of 12 nuclear power plants of the 1,000-megawatt size."

An excellent report, "Oregon's Bottle Bill: Two Years Later," by Don Waggoner, puts that state's energy savings at enough to heat 50,000 homes or to generate 130 million kilowatt hours of electricity worth $2.8 million. And McCall claims it takes only 5% of the energy to recycle a can as it does to make a new one.

Nationally, energy savings would run about the equivalent of 39 million barrels of oil annually. Figures like this prompted John Sawhill, former head of the Federal Energy Administration, to remark, "There are few other instances...where energy savings of this magnitude could be achieved as easily...."

Litter—The Research Triangle Institute of North Carolina reports that even back in 1969 about two billion throwaways ended up along the country's roadways. And the use of throwaways has increased considerably since then. This, of course, doesn't include bottles and cans littering trails, streams, lakes, parks, etc.

Throwaways make up about 20% to 40% of all litter. Worse, a California study put that state's current litter-caused injuries at about 300,000 annually. The primary villains were broken bottles and pull-tabs.

As alternatives to the bottle bill, industry spokesmen opt for container taxes to fund trash cleanups or accelerated public education campaigns to reduce litter. However, extensive efforts to educate the public against littering haven't cleaned up America, proponents point out. Also, bottle bill supporters object to a publicly financed litter cleanup when consumers are willing to do the same thing for free.

A few opponents even claim the bottle bill doesn't really cut down litter. Again, however, research indicates the reverse.

Two years after Oregon's bottle bill took effect, beer and soft drink container castoffs decreased 83%, according to Waggoner. And *all* litter was reduced 39% by piece and 47% by volume. Likewise, the Vermont Highway Dept. reports beverage container litter down by 76% and all litter by 33%.

A staff study by the U.S. Dept. of Commerce estimates a 70% to 80% reduction in beverage container litter. And finally, a study by Applied Decision Systems (ADS), conducted for the Oregon Legislature, found beer and pop roadside trash down 66% and all litter down 11% one year after the law became effective.

Thus, a ban on throwaways *definitely* cuts down on litter.

For sportsmen, reduced litter means less severe landowner/recreationist problems. Many landowners post their land because of unsightly piles of trash left by a few inconsiderate recreationists.

Wildlife, natural resources and environmental quality—The primary environmental appeal of the bottle bill is conservation of energy and natural resources. A national bottle bill would conserve approximately five million to six million tons of basic resources each year, according to the Environmental Protection Agency. From a wildlife and environmental quality standpoint, this means less destructive mining, exploration and processing.

A considerable amount of the energy goes into producing throwaway containers year after year. We consume energy to produce throwaways, then

continued

SPRINGBOARD

"When I think of bottles, I think of lobbyists. Anyone who has worked to get a bottle bill through a state legislature or a city council has had to wonder how so many lobbyists can pop up to oppose a bill that simply proposes to reduce waste. Despite their relative success this year, I have a prediction for the industries which do such intense, expensive and persistent lobbying against bottle bills around the country: Their technical and legal experts are fighting a losing battle. In 10 years bottle laws will be working in a majority of the states. The public is beginning to understand that the 'convenience' of overpackaging is really cheating them out of dollars and littering the land. The public is fed up with the legislative process being controlled by special interest lobbyists. The beer and soda interests are learning that an informed public will not tolerate such conscious waste as throwaway bottles and cans. And they are learning that the public will not subsidize a private policy of waste by publicly financing recycling operations."—*Peter Franchot, "The Vermont Story,"* Environmental Action, *July 19, 1975*

FOR DISCUSSION

THE GREAT CONTAINER CONTROVERSY

A ban on throwaway beverage containers eases a proliferating litter problem, helps keep private land open to public recreation, saves energy and natural resources, creates jobs and has a minimal long-term impact on industry. All the photos on these two pages are courtesy of the Michigan Dept. of Natural Resources except the lower left photo which is an F&G photo by Lee Zellar.

GENUINE

THE GREAT CONTAINER CONTROVERSY

throw them away and consume at least the same amount of energy the next year to produce more beverage containers to throw away. This process, of course, goes on and on.

The aluminum industry takes a big bite of the nation's energy pie. In Montana, almost one-third of the total amount of electricity consumed is used by *one* aluminum processing plant, The Anaconda Co./Aluminum Division in Columbia Falls, according to the Bonneville Power Administration. About *one-third* of the Northwest's electrical output goes to the aluminum industry. And right now, at least two new aluminum plants are proposed, one in Oregon and another in Washington. Young's Bay Estuary, a prime wildlife area, was the industry's *preferred* site for the Oregon plant—although it has now been moved to a site near Umatilla.

The Columbia River system has been dammed forever by 135 major impoundments. Another 58 are proposed. And this doesn't consider the dams built or proposed on the Columbia's smaller tributaries.

The once fabulous salmon and steelhead fishery, dependent on yearly passage to and from the Pacific, has almost disappeared. Idaho has been forced to close the season on many salmon and steelhead waters in a last ditch attempt to retain any kind of fishery.

These dams similarly raze wildlife populations, as big game winter range, waterfowl production areas and other vital habitat ends up under water or as plantless mud flats. Montana's Libby Dam alone ruined about 42,000 acres of big game winter range.

The impact of destructive extraction and conversion of fossil fuels and other natural resources—i.e., strip mining on the northern Great Plains, oil shale development in Colorado, power projects in southern Utah, etc.—would be indirectly eased if America could only conserve. Throwaways can't be entirely blamed for these developments, but they share in the responsibility.

Consumers—Consumer savings is probably the major force in favor of the bill. Prof. Bruce Hannon of the University of Illinois studied this and concluded a national bottle bill would save consumers $1.4 billion per year.

"Coke sold in food stores in nonreturnable packages is priced, on the average, 30 to 40 per cent higher than in returnable bottles," the president of Coca-Cola, U.S.A. told Congress in 1972. Why? Soft drink cans cost about seven cents each. Compare this with the refillable system which reduces the cost per filling to about one cent, according to a Pepsi-Cola franchiser in Portland, Ore.

Opponents argue that the bottle bill denies consumers the "freedom of choice" and the "convenience" of buying throwaways. However, overwhelming consumer approval of the bottle bill refutes this. In 1970, while Oregon was considering bottle legislation, the prestigious Opinion Research Corp. surveyed Oregonians. The surveyors found 62% of men surveyed and 66% of the women in favor of a ban on throwaways. Only 29% of the men and 22% of the women disapproved.

Another survey in Oregon found that only 12% felt it was inconvenient to pay deposits and return empties. A mere 7% thought the law limited their freedom of choice for soft drinks—3% for beer. And the Applied Decision Systems study, prepared for the Oregon Legislature, notes, " 'Overwhelming' is virtually the only word to describe Oregon's approval of the bottle bill. Nine in ten (91%) said they approved, and only one in twenty voiced any disapproval at all."

Given this, it appears "convenient" means what's easiest for the industry and supermarkets, not for the consumer.

Opponents have also argued that the bill increases beverage prices to the consumer. However, the opposite appears more likely since it's less costly to use returnables. Coors started its returnable program as an environmental measure, but later found the value of recaptured containers offset most costs. Waggoner says slight price increases were *not* due to the bottle bill but general inflationary trends, grain and sugar price hikes, etc.

Jobs and the impact on industry—Perhaps the most controversial aspect of the bottle bill is its impact on employment. Protesters put the job loss at about 60,000 nationwide. This may be close if one only considers the job *loss* and ignores the *gain*. Overall, the legislation creates jobs. Some industries lose, and others gain. And, it comes out on the *plus* side.

Briefly, the bill hurts the can and bottle manufacturers and helps the bottling industry. In Oregon, about 350 jobs were lost throughout the beverage industry, according to a study by Oregon State University, "The Economic Impact of Oregon's Bottle Bill." However, 140 new truck driving jobs plus 575 more in warehousing and handling were *created*, meaning a net gain of 365 full-time jobs and an increased annual payroll of $1.6 million.

Understandably, unions representing workers on the negative side of this job shift oppose container legislation. Likewise, workers whose industries gain find their workers supporting the bottle bill—although not as vigorously as those who lose.

In Vermont, the AFL-CIO leadership could *not* get the support of the rank and file to oppose the bill. Oregon's most active teamster calls this "a Teamster bill." And the United Auto Workers favor a national

bill, as do such diverse groups as the National League of Cities, U.S. Conference of Mayors, Environmental Protection Agency, the League of Women Voters and various environmental and consumer groups.

"When I was in Maryland earlier this year," McCall told the American Assn. for Conservation Information in Portland, Ore. in June 1975, "the Council of Economic Advisers noted that a switch to a returnable system would result in a net of 1,500 more jobs in Maryland, would increase the state's personal income by $18.5 billion, would increase state and local tax revenues by $1.4 billion and would require less expenditure for cleanup."

McCall describes a similar situation in New York state. "An Oregon-style returnable system would bring about an industry investment of about $175 billion in new capital and $35 million in this one state in new payroll, a net gain of 4,007 jobs. Consumers would save $40 million, as a result of lowered production costs of the industry, and a direct saving of $2 million would result from elimination of the beverage container portion of litter in New York state."

The Dept. of Commerce study generally confirmed the contentions of bottle bill supporters on this. Nationally, the study forecast a loss of 82,000 and a gain of 95,000 to 115,000 jobs.

Large breweries bitterly complain about the bottle bill now. But ironically, little was said when the shift *to throwaways* centralized the industry and cost America 20,000 jobs, so say Earl and Miriam Selby, writing in the March 1976 *Reader's Digest.*

In 1960, Americans drank 95% of their beer and soda pop from bottles which were then returned and refilled just like they are *now* in Oregon and Vermont, according to the same article. Today, however, 79% of packaged beer and two of three soft drinks are sold in cans or no deposit, no return bottles.

"If present trends toward throwaway containers continue," N.E. Norton, president of the Dr. Pepper-Royal Crown Bottling Co., notes, "less than 2,000 soft drink bottlers will be in operation in the United States by 1980, whereas in 1960 there were over 4,500. This same process of concentration in a few large companies took place in the beer industry about 15 years ago, reducing the number of breweries in the United States from 262 in 1958 to the present 64, and to a predicted 30 by 1980."

This transition cost dearly. No longer needing to get empties back to the plant, brewers could instead ship throwaways thousands of miles. This allowed large breweries to invade the markets of their smaller rivals and gradually gobble up the competition. Today, *eight* breweries control *three-fourths* of the market. And it's these giants that would be hardest hit by the bottle bill, as the incentive swings back to the smaller, local breweries.

Testifying to this, Montana formerly had at least one and often two or three breweries in every major city. But today, Montana has *no* breweries—at least partly due to the throwaway system.

Many Montanans feel this is an appropriate and promising type of industry to lure to the Treasure State. But the brewing industry will be difficult to re-establish without a ban on throwaways.

As with employment, industries have gainers and losers. Surely, the country is enmeshed in the throwaway business. And a return to the returnables would have a significant impact on certain industries. However, after a rough one-year transition, there's smooth sailing ahead.

The industry hired Midwest Research Institute (MRI) of Kansas City to determine the impact of the ban. MRI estimated aggregate impact (including new equipment and additional labor) for brewers, beer distributors, bottlers and retailers in the first year to be a loss of $247 million. By the second year, however, lower container costs with a refillable system were seen as yielding an aggregate gain of $37 million.

The beverage industry would rather fight than switch, though. Cutting through all the statistics, it comes down to: Throwaways make more money for the beverage industry and consumers save more money with the returnable system. The consumers want it, but the industry won't provide it voluntarily.

Considering all of this, sportsmen and other outdoor enthusiasts should be fighting mad. In Oregon, sportsmen are shocked to find a broken beer bottle or a pull-tab along a wilderness trail. But the exact opposite prevails over most of the country. Regardless of public education efforts and some interest in recycling, beverage containers continue to dot the landscape, indirectly cause destruction of vital wildlife habitat and waste energy and natural resources. Indeed, the convenience of buying throwaways *costs* us more than $1.75 a six-pack.

But the bottle bill is more than an energy and resource conserver, litter reducer and money saver. It's a battle line for changing times. Sooner or later, "waste not, want not" must replace "no deposit, no return." America must replace wasteful, throwaway times with a conserving, husbanding society. And there is no better place to start than the bottle bill. A small deposit brings a large return.

WHAT YOU CAN DO

Legislation similar to Oregon's bottle bill will most likely be introduced into the 1977 Montana Legislature. This is your chance. Use the facts in this article or your own experiences to support this needed legislation.

In Congress, S.2833, introduced by Sen. Mark Hatfield (R-Oregon), would ban throwaways nationwide. Again, show your concern and support this bill.

KEEPING MONTANA BEAUTIFUL
—see page 39